

From the INTERNATIONAL SEARCHING AUTHORITY

RECEIVED

PCT

To:  
CESARI AND MCKENNA, LLP  
Attn. Loginov, William A.  
88 Black Falcon Avenue  
Boston, Massachusetts 02210  
UNITED STATES OF AMERICA

MAY 06 2005  
CESARI & MCKENNA

NOTIFICATION OF TRANSMITTAL OF  
THE INTERNATIONAL SEARCH REPORT AND  
THE WRITTEN OPINION OF THE INTERNATIONAL  
SEARCHING AUTHORITY, OR THE DECLARATION

U.S. Appl:  
6-02-05 - Attny IDS

(PCT Rule 44.1)

Date of mailing  
(day/month/year)

02/05/2005

Applicant's or agent's file reference

104119-44PCT

FOR FURTHER ACTION

See paragraphs 1 and 4 below

International application No.

PCT/US2004/034389

International filing date  
(day/month/year)

18/10/2004

Applicant

COGNEX TECHNOLOGY AND INVESTMENT CORPORATION

1. ☒ The applicant is hereby notified that the International search report and the written opinion of the International Searching Authority have been established and are transmitted herewith.

Filing of amendments and statement under Article 19:

The applicant is entitled, if he so wishes, to amend the claims of the International Application (see Rule 48):

**When?** The time limit for filing such amendments is normally 2 months from the date of transmittal of the International Search Report; however, for more details, see the notes on the accompanying sheet.

**Where?** Directly to the International Bureau of WIPO, 34 chemin des Colombettes  
1211 Geneva 20, Switzerland, Facsimile No.: (41-22) 740.14.35

For more detailed instructions, see the notes on the accompanying sheet.

2. ☐ The applicant is hereby notified that no international search report will be established and that the declaration under Article 17(2)(a) to that effect and the written opinion of the International Searching Authority are transmitted herewith.
3. ☐ With regard to the protest against payment of (an) additional fee(s) under Rule 40.2, the applicant is notified that:

- ☐ the protest together with the decision thereon has been transmitted to the International Bureau together with the applicant's request to forward the texts of both the protest and the decision thereon to the designated Offices.
- ☐ no decision has been made yet on the protest; the applicant will be notified as soon as a decision is made.

#### 4. Reminders

Shortly after the expiration of 18 months from the priority date, the international application will be published by the International Bureau. If the applicant wishes to avoid or postpone publication, a notice of withdrawal of the international application, or of the priority claim, must reach the International Bureau as provided in Rules 90bis.1 and 90bis.3, respectively, before the completion of the technical preparations for international publication.

The applicant may submit comments on an informal basis on the written opinion of the International Searching Authority to the International Bureau. The International Bureau will send a copy of such comments to all designated Offices unless an international preliminary examination report has been or is to be established. These comments would also be made available to the public but not before the expiration of 30 months from the priority date.

Within 19 months from the priority date, but only in respect of some designated Offices, a demand for international preliminary examination must be filed if the applicant wishes to postpone the entry into the national phase until 30 months from the priority date (in some Offices even later); otherwise, the applicant must, within 20 months from the priority date, perform the prescribed acts for entry into the national phase before those designated Offices.

In respect of other designated Offices, the time limit of 30 months (or later) will apply even if no demand is filed within 19 months.

See the Annex to Form PCT/IB/301 and, for details about the applicable time limits, Office by Office, see the PCT Applicant's Guide, Volume II, National Chapters and the WIPO Internet site.

Name and mailing address of the International Searching Authority



European Patent Office, P.B. 5818 Patentlaan 2  
NL-2280 HV Rijswijk  
Tel. (+31-70) 340-2040, Tx. 31 651 epo nl,  
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Authorized officer

Mustafa Corapci

6.02.05 - cu: Amend claims

## NOTES TO FORM PCT/ISA/220

These Notes are intended to give the basic instructions concerning the filing of amendments under article 19. The Notes are based on the requirements of the Patent Cooperation Treaty, the Regulations and the Administrative Instructions under that Treaty. In case of discrepancy between these Notes and those requirements, the latter are applicable. For more detailed information, see also the *PCT Applicant's Guide*, a publication of WIPO.

In these Notes, "Article", "Rule", and "Section" refer to the provisions of the PCT, the PCT Regulations and the PCT Administrative Instructions, respectively.

### INSTRUCTIONS CONCERNING AMENDMENTS UNDER ARTICLE 19

The applicant has, after having received the international search report and the written opinion of the International Searching Authority, one opportunity to amend the claims of the international application. It should however be emphasized that, since all parts of the international application (claims, description and drawings) may be amended during the international preliminary examination procedure, there is usually no need to file amendments of the claims under Article 19 except where, e.g. the applicant wants the latter to be published for the purposes of provisional protection or has another reason for amending the claims before international publication. Furthermore, it should be emphasized that provisional protection is available in some States only (see *PCT Applicant's Guide*, Annexes B1 and B2).

The attention of the applicant is drawn to the fact that amendments to the claims under Article 19 are not allowed where the International Searching Authority has declared, under Article 17(2), that no international search report would be established (see *PCT Applicant's Guide*, Volume I/A, paragraph 296).

#### What parts of the international application may be amended?

Under Article 19, only the claims may be amended.

During the international phase, the claims may also be amended (or further amended) under Article 34 before the International Preliminary Examining Authority. The description and drawings may only be amended under Article 34 before the International Examining Authority.

Upon entry into the national phase, all parts of the international application may be amended under Article 28 or, where applicable, Article 41.

#### When?

Within 2 months from the date of transmittal of the international search report or 16 months from the priority date, whichever time limit expires later. It should be noted, however, that the amendments will be considered as having been received on time if they are received by the International Bureau after the expiration of the applicable time limit but before the completion of the technical preparations for international publication (Rule 46.1).

#### Where not to file the amendments?

The amendments may only be filed with the International Bureau and not with the receiving Office or the International Searching Authority (Rule 46.2).

Where a demand for international preliminary examination has been filed, see below.

#### How?

Either by cancelling one or more entire claims, by adding one or more new claims or by amending the text of one or more of the claims as filed.

A replacement sheet must be submitted for each sheet of the claims which, on account of an amendment or amendments, differs from the sheet originally filed.

All the claims appearing on a replacement sheet must be numbered in Arabic numerals. Where a claim is cancelled, no renumbering of the other claims is required. In all cases where claims are renumbered, they must be renumbered consecutively (Administrative Instructions, Section 205(b)).

The amendments must be made in the language in which the international application is to be published.

#### What documents must/may accompany the amendments?

Letter (Section 205(b)):

The amendments must be submitted with a letter.

The letter will not be published with the international application and the amended claims. It should not be confused with the "Statement under Article 19(1)" (see below, under "Statement under Article 19(1)").

The letter must be in English or French, at the choice of the applicant. However, if the language of the international application is English, the letter must be in English; if the language of the international application is French, the letter must be in French.

# PCT

## INTERNATIONAL SEARCH REPORT

(PCT Article 18 and Rules 43 and 44)

Applicant's or agent's file reference 104119 - 44 PCT	<b>FOR FURTHER ACTION</b> see Form PCT/ISA/220 as well as, where applicable, item 5 below.	
International application No. PCT/US2004/034389	International filing date (day/month/year) 18/10/2004	(Earliest) Priority Date (day/month/year) 24/10/2003
Applicant COGNEX TECHNOLOGY AND INVESTMENT CORPORATION		

This International Search Report has been prepared by this International Searching Authority and is transmitted to the applicant according to Article 18. A copy is being transmitted to the International Bureau.

This International Search Report consists of a total of 7 sheets.

☐ It is also accompanied by a copy of each prior art document cited in this report.

**1. Basis of the report**

- a. With regard to the **language**, the international search was carried out on the basis of the international application in the language in which it was filed, unless otherwise indicated under this item.

☐ The international search was carried out on the basis of a translation of the international application furnished to this Authority (Rule 23.1(b)).

- b. ☐ With regard to any **nucleotide and/or amino acid sequence** disclosed in the international application, see Box No. I.

2. ☐ **Certain claims were found unsearchable** (See Box II).

3. ☒ **Unity of invention is lacking** (see Box III).

**4. With regard to the title,**

☒ the text is approved as submitted by the applicant.

☐ the text has been established by this Authority to read as follows:

**5. With regard to the abstract,**

☒ the text is approved as submitted by the applicant.

☐ the text has been established, according to Rule 38.2(b), by this Authority as it appears in Box No. IV. The applicant may, within one month from the date of mailing of this international search report, submit comments to this Authority.

**6. With regard to the drawings,**

- a. the figure of the **drawings** to be published with the abstract is Figure No. 8

☒ as suggested by the applicant.

☐ as selected by this Authority, because the applicant failed to suggest a figure.

☐ as selected by this Authority, because this figure better characterizes the invention.

- b. ☐ none of the figures is to be published with the abstract.

**Box II Observations where certain claims were found unsearchable (Continuation of item 2 of first sheet)**

This International Search Report has not been established in respect of certain claims under Article 17(2)(a) for the following reasons:

1. ☐ Claims Nos.:  
because they relate to subject matter not required to be searched by this Authority, namely:
2. ☐ Claims Nos.:  
because they relate to parts of the International Application that do not comply with the prescribed requirements to such an extent that no meaningful International Search can be carried out, specifically:
3. ☐ Claims Nos.:  
because they are dependent claims and are not drafted in accordance with the second and third sentences of Rule 6.4(a).

**Box III Observations where unity of invention is lacking (Continuation of item 3 of first sheet)**

This International Searching Authority found multiple inventions in this international application, as follows:

see additional sheet

1. ☐ As all required additional search fees were timely paid by the applicant, this International Search Report covers all searchable claims.
2. ☐ As all searchable claims could be searched without effort justifying an additional fee, this Authority did not invite payment of any additional fee.
3. ☐ As only some of the required additional search fees were timely paid by the applicant, this International Search Report covers only those claims for which fees were paid, specifically claims Nos.:
4. ☒ No required additional search fees were timely paid by the applicant. Consequently, this International Search Report is restricted to the invention first mentioned in the claims; it is covered by claims Nos.:

1-10

**Remark on Protest**

- ☐ The additional search fees were accompanied by the applicant's protest.
- ☐ No protest accompanied the payment of additional search fees.

## FURTHER INFORMATION CONTINUED FROM PCT/ISA/ 210

This International Searching Authority found multiple (groups of) inventions in this international application, as follows:

1. claims: 1-10

An illuminator for illuminating a subject that is imaged by an image sensor comprising a first ring light source arranged in a perimeter of a predetermined shape communicating with a first light pipe having a cross section with the predetermined shape, the first light pipe defining an inner lumen through which the sensor views the subject and the light pipe including a tip adapted to project a low-angle dark field illumination pattern on the subject, the illuminator further comprising a controller that selectively controls predetermined portions of the first ring light source to project a variable light around the perimeter

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2. claims: 11-22,34,35

An illuminator for illuminating a subject that is imaged by an image sensor comprising a first ring light source arranged in a perimeter of a predetermined shape communicating with a first light pipe having a cross section with the predetermined shape, the first light pipe defining an inner lumen through which the sensor views the subject and the light pipe including a tip adapted to project a low-angle dark field illumination pattern on the subject, the illuminator further comprising a bright field illuminator

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3. claims: 23-29

An illuminator for illuminating a subject that is imaged by an image sensor comprising a ring light source arranged in a perimeter of a predetermined shape communicating with a light pipe having a cross section with the predetermined shape, the light pipe defining an inner lumen through which the sensor views the subject and the light pipe including a tip adapted to project a high-angle bright field illumination pattern on the subject

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4. claims: 30-33

## FURTHER INFORMATION CONTINUED FROM PCT/ISA/ 210

an illuminator for illuminating a subject that is imaged by an image sensor comprising a ring light source arranged in a perimeter of a predetermined shape communicating with a light pipe having a cross section with the predetermined shape, the light pipe defining an inner lumen through which the sensor views the subject and the light pipe including a tip adapted to project an illumination pattern with respect to the subject, wherein the illumination pattern covers a reduced area with respect to the field of view whereby an aiming location is highlighted by the illumination pattern

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A. CLASSIFICATION OF SUBJECT MATTER  
IPC 7 G06K7/10

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

IPC 7 G06K

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)

EPO-Internal, PAJ, WPI Data

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
Y	<p>WO 99/49347 A (AUTO IMAGE ID, INC) 30 September 1999 (1999-09-30) page 1, lines 13-18 page 2, lines 8-15 page 4, lines 9-14,22-29 page 5, line 24 - page 6, line 9 page 6, lines 15-21 page 7, lines 9,10,18-23 page 10, lines 5,6 figures 1,3</p> <p>----- -/--</p>	1,3-10

☒ Further documents are listed in the continuation of box C.

☒ Patent family members are listed in annex.

\* Special categories of cited documents :

"A" document defining the general state of the art which is not considered to be of particular relevance

"E" earlier document but published on or after the international filing date

"L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)

"O" document referring to an oral disclosure, use, exhibition or other means

"P" document published prior to the international filing date but later than the priority date claimed

"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention

"X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone

"Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art.

"&" document member of the same patent family

Date of the actual completion of the international search

15 February 2005

Date of mailing of the international search report

02 05 2005

Name and mailing address of the ISA

European Patent Office, P.B. 5818 Patentlaan 2  
NL - 2280 HW Rijswijk  
Tel: (+31-70) 340-2040; Tx: 31 651 epo nl,  
Fax: (+31-70) 340-3016

Authorized officer

Meister, M

## C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
Y	US 6 394 349 B1 (SHIGEKUSA HISASHI ET AL) 28 May 2002 (2002-05-28) column 1, lines 13-17,30-35 column 1, line 66 - column 2, line 2 column 4, lines 37-40,45-52 column 7, line 61 - column 8, line 27 column 10, lines 59-61 figures 5,8	1,3-10
A	----- US 6 141 046 A (ROTH ET AL) 31 October 2000 (2000-10-31) column 8, lines 8-18 -----	9,10



Patent document cited in search report		Publication date	Patent family member(s)	Publication date
WO 9949347	A	30-09-1999	AU 3090199 A	18-10-1999
			CA 2324626 A1	30-09-1999
			EP 1064580 A1	03-01-2001
			JP 2002507779 T	12-03-2002
			NO 20004706 A	27-10-2000
			WO 9949347 A1	30-09-1999
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US 6394349	B1	28-05-2002	JP 3228197 B2	12-11-2001
			JP 11120284 A	30-04-1999
-----				
US 6141046	A	31-10-2000	AT 190416 T	15-03-2000
			AT 275743 T	15-09-2004
			CA 2202909 C	05-12-2000
			DE 69515500 D1	13-04-2000
			DE 69533491 D1	14-10-2004
			DK 788634 T3	04-12-2000
			EP 1489550 A2	22-12-2004
			EP 0788634 A2	13-08-1997
			EP 0959425 A2	24-11-1999
			ES 2143084 T3	01-05-2000
			GR 3033054 T3	31-08-2000
			JP 2933720 B2	16-08-1999
			JP 10501360 T	03-02-1998
			PT 788634 T	31-08-2000
			WO 9613798 A2	09-05-1996
			US 5818528 A	06-10-1998
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To:

see form PCT/ISA220

PCT

WRITTEN OPINION OF THE  
INTERNATIONAL SEARCHING AUTHORITY  
(PCT Rule 43b/s.1)

Date of mailing  
(day/month/year) see form PCT/ISA210 (second sheet)

Applicant's or agent's file reference  
see form PCT/ISA220

**FOR FURTHER ACTION**  
See paragraph 2 below

International application No.  
PCT/JS2004/034389

International filing date (day/month/year)  
18.10.2004

Priority date (day/month/year)  
24.10.2003

International Patent Classification (IPC) or both national classification and IPC  
G06K7/10

Applicant  
COGNEX TECHNOLOGY AND INVESTMENT CORPORATION

1. This opinion contains indications relating to the following items:

- ☒ Box No. I Basis of the opinion
- ☒ Box No. II Priority
- ☒ Box No. III Non-establishment of opinion with regard to novelty, Inventive step and Industrial applicability
- ☒ Box No. IV Lack of unity of Invention
- ☒ Box No. V Reasoned statement under Rule 43b/s.1(a)(i) with regard to novelty, Inventive step or industrial applicability; citations and explanations supporting such statement
- ☐ Box No. VI Certain documents cited
- ☐ Box No. VII Certain defects in the International application
- ☐ Box No. VIII Certain observations on the International application

2. **FURTHER ACTION**

If a demand for international preliminary examination is made, this opinion will usually be considered to be a written opinion of the International Preliminary Examining Authority ("IPEA"). However, this does not apply where the applicant chooses an Authority other than this one to be the IPEA and the chosen IPEA has notified the International Bureau under Rule 66.1b/s(b) that written opinions of this International Searching Authority will not be so considered.

If this opinion is, as provided above, considered to be a written opinion of the IPEA, the applicant is invited to submit to the IPEA a written reply together, where appropriate, with amendments, before the expiration of three months from the date of mailing of Form PCT/ISA220 or before the expiration of 22 months from the priority date, whichever expires later.

For further options, see Form PCT/ISA220.

3. For further details, see notes to Form PCT/ISA220.

7.24.05 - cu: Written Opin Resp.  
8.24.05 - Due: " " "

Name and mailing address of the ISA:



European Patent Office - P.B. 5816 Patentlaan 2  
NL-2280 HV Rijswijk - Pays Bas  
Tel. +31 70 340 - 2040 Tx: 31 651 epo nl  
Fax: +31 70 340 - 3016

Authorized Officer

Meister, M

Telephone No. +31 70 340-4195



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**Box No. I Basis of the opinion**

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1. With regard to the **language**, this opinion has been established on the basis of the international application in the language in which it was filed, unless otherwise indicated under this item.  
☐ This opinion has been established on the basis of a translation from the original language into the following language , which is the language of a translation furnished for the purposes of international search (under Rules 12.3 and 23.1(b)).
2. With regard to any **nucleotide and/or amino acid sequence** disclosed in the international application and necessary to the claimed invention, this opinion has been established on the basis of:
  - a. type of material:  
☐ a sequence listing  
☐ table(s) related to the sequence listing
  - b. format of material:  
☐ in written format  
☐ in computer readable form
  - c. time of filing/furnishing:  
☐ contained in the international application as filed.  
☐ filed together with the international application in computer readable form.  
☐ furnished subsequently to this Authority for the purposes of search.
3. ☐ In addition, in the case that more than one version or copy of a sequence listing and/or table relating thereto has been filed or furnished, the required statements that the information in the subsequent or additional copies is identical to that in the application as filed or does not go beyond the application as filed, as appropriate, were furnished.
4. Additional comments:

**WRITTEN OPINION OF THE  
INTERNATIONAL SEARCHING AUTHORITY**

International application No.  
PCT/US2004/034389

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**Box No. II    Priority**

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1. ☒ The following document has not been furnished:

☒ copy of the earlier application whose priority has been claimed (Rule 43*bis*.1 and 66.7(a)).

☐ translation of the earlier application whose priority has been claimed (Rule 43*bis*.1 and 66.7(b)).

Consequently it has not been possible to consider the validity of the priority claim. This opinion has nevertheless been established on the assumption that the relevant date is the claimed priority date.

2. ☐ This opinion has been established as if no priority had been claimed due to the fact that the priority claim has been found invalid (Rules 43*bis*.1 and 64.1). Thus for the purposes of this opinion, the international filing date indicated above is considered to be the relevant date.
3. ☐ The International Searching Authority has not been able to consider the validity of the priority claim because a copy of the earlier application whose priority has been claimed was not available to the International Searching Authority at the time that the search was conducted (Rule 17.1). This opinion has nevertheless been established on the assumption that the relevant date is the claimed priority date.
4. Additional observations, if necessary:

**WRITTEN OPINION OF THE  
INTERNATIONAL SEARCHING AUTHORITY**

International application No.  
PCT/US2004/034389

**Box No. III Non-establishment of opinion with regard to novelty, inventive step and industrial applicability**

The questions whether the claimed invention appears to be novel, to involve an inventive step (to be non obvious), or to be industrially applicable have not been examined in respect of:

- ☐ the entire international application,
- ☒ claims Nos. 11-35

because:

- ☐ the said international application, or the said claims Nos. relate to the following subject matter which does not require an international preliminary examination (*specify*):
- ☐ the description, claims or drawings (*indicate particular elements below*) or said claims Nos. are so unclear that no meaningful opinion could be formed (*specify*):
- ☐ the claims, or said claims Nos. are so inadequately supported by the description that no meaningful opinion could be formed.
- ☒ no international search report has been established for the whole application or for said claims Nos. 11-35
- ☐ the nucleotide and/or amino acid sequence listing does not comply with the standard provided for in Annex C of the Administrative Instructions in that:
  - the written form ☐ has not been furnished
  - ☐ does not comply with the standard
  - the computer readable form ☐ has not been furnished
  - ☐ does not comply with the standard
- ☐ the tables related to the nucleotide and/or amino acid sequence listing, if in computer readable form only, do not comply with the technical requirements provided for in Annex C-bis of the Administrative Instructions.
- ☐ See separate sheet for further details

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**Box No. IV Lack of unity of invention**

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1. ☒ In response to the invitation (Form PCT/ISA/206) to pay additional fees, the applicant has:
- ☐ paid additional fees.
  - ☐ paid additional fees under protest.
  - ☒ not paid additional fees.
2. ☐ This Authority found that the requirement of unity of invention is not complied with and chose not to invite the applicant to pay additional fees.
3. This Authority considers that the requirement of unity of invention in accordance with Rule 13.1, 13.2 and 13.3 is
- ☐ complied with
  - ☒ not complied with for the following reasons:  
**see separate sheet**
4. Consequently, this report has been established in respect of the following parts of the International application:
- ☐ all parts.
  - ☒ the parts relating to claims Nos. 1-10

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**Box No. V Reasoned statement under Rule 43b/s.1(a)(i) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement**

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1. Statement

Novelty (N)	Yes: Claims	1-10
	No: Claims	
Inventive step (IS)	Yes: Claims	2
	No: Claims	1,3-10
Industrial applicability (IA)	Yes: Claims	1-10
	No: Claims	

2. Citations and explanations

**see separate sheet**

Reference is made to the following documents:

- D1: WO 99/49347 A (AUTO IMAGE ID, INC) 30 September 1999 (1999-09-30)
- D2: US-B1-6 394 349 (SHIGEKUSA HISASHI ET AL) 28 May 2002 (2002-05-28)
- D3: US-A-6 141 046 (ROTH ET AL) 31 October 2000 (2000-10-31)

**Re Item IV**

**Lack of unity of invention**

This Authority considers that there are 4 inventions covered by the claims indicated as follows:

- I: claims 1-10 directed to an illuminator for illuminating a subject that is imaged by an image sensor comprising a first ring light source arranged in a perimeter of a predetermined shape communicating with a first light pipe having a cross section with the predetermined shape, the first light pipe defining an inner lumen through which the sensor views the subject and the light pipe including a tip adapted to project a low-angle dark field illumination pattern on the subject, the illuminator further comprising a controller that selectively controls predetermined portions of the first ring light source to project a variable light around the perimeter;
- II: claims 11-22 and 34, 35 directed to an illuminator for illuminating a subject that is imaged by an image sensor comprising a first ring light source arranged in a perimeter of a predetermined shape communicating with a first light pipe having a cross section with the predetermined shape, the first light pipe defining an inner lumen through which the sensor views the subject and the light pipe including a tip adapted to project a low-angle dark field illumination pattern on the subject, the illuminator further comprising a bright field illuminator;
- III: claims 23-29 directed to an illuminator for illuminating a subject that is imaged by an image sensor comprising a ring light source arranged in a perimeter of a predetermined shape communicating with a light pipe having a cross section with the predetermined shape, the light pipe defining an inner lumen through which the sensor views the subject and the light pipe including a tip adapted to project a high-angle bright field illumination pattern on the subject;
- IV: claims 30-33 directed to an illuminator for illuminating a subject that is imaged by an image sensor comprising a ring light source arranged in a perimeter of a

predetermined shape communicating with a light pipe having a cross section with the predetermined shape, the light pipe defining an inner lumen through which the sensor views the subject and the light pipe including a tip adapted to project an illumination pattern with respect to the subject, wherein the illumination pattern covers a reduced area with respect to the field of view whereby an aiming location is highlighted by the illumination pattern.

The reasons for which the inventions are not so linked as to form a single general inventive concept, as required by Rule 13.1 PCT, are as follows:

the following technical features are completely disclosed in D1 (the references is parentheses applying to this document):

an illuminator for illuminating a subject that is imaged by an image sensor comprising (pag. 1, lin. 13-18, pag. 2, lin. 8-15, pag. 4, lin. 9-14; fig. 1) a first ring light source arranged in a perimeter of a predetermined shape (pag. 4, lin. 26-29, pag. 7, lin. 18-19; fig. 1) communicating with a first light pipe having a cross section with the predetermined shape, the first light pipe defining an inner lumen through which the sensor views the subject (pag. 5, lin. 24 - pag. 6, lin. 2, pag. 7, lin. 9-10; fig. 1) and the light pipe including a tip adapted to project a low-angle dark field illumination pattern on the subject (pag. 4, lin. 22-25, pag. 6, lin. 3-9 and 15-21; fig. 1).

It is pointed out that, although the term "low-angle dark field illumination pattern" is not explicitly mentioned in document D1, the illumination pattern projected by the illuminator of document D1 is clearly a low-angle dark field illumination pattern because it is such that the reflection from specular or highly reflective surfaces on which codes have been marked does not reach the imaging device, contrary to the diffuse component of the reflection (pag. 6, lin. 15-21).

1) Subject I:

- the following special technical features (STF-1) seems to make a contribution over D1:
- independent claim 1: the illuminator further comprises a controller that selectively controls predetermined portions of the first ring light source to project a variable light around the perimeter;



from these special technical features, the technical problem to be solved by the first invention can be construed as:

how to further reduce mirror reflections when the surfaces onto which the indicia are printed are shiny, or mirror-like surfaces.

2) Subject II:

- the following special technical features (STF-2) seems to make a contribution over D1:
  - independent claim 11: the illuminator further comprises a second ring light source coaxial with respect to the first ring light source and communicating with a second light pipe coaxial with the first light pipe, the second light pipe having a tip adapted to project a high-angle bright field illumination pattern with respect to the subject;

from these special technical features, the technical problem to be solved by the second invention can be construed as:

how to provide both a bright field illumination at a relative distance from the subject and a dark field illumination close to the subject with a single illuminator.

3) Subject III:

- the following special technical features (STF-3) seems to make a contribution over D1:
  - independent claim 23: the tip of the light pipe is adapted to project a high-angle bright field illumination pattern with respect to the subject;

from these special technical features, the technical problem to be solved by the third invention can be construed as:

how to obtain a high homogeneous bright field illumination pattern.

4) Subject IV:

- the following special technical features (STF-4) seems to make a contribution over D1:
  - independent claim 30: the tip of the light pipe is adapted to project an illumination pattern with respect to the subject, wherein the illumination pattern covers a reduced area with respect to the field of view whereby an aiming location is highlighted by the illumination pattern;

from these special technical features, the technical problem to be solved by the fourth invention can be construed as:

how to provide illumination of the subject and at the same time assist aiming of the image sensor at the subject, thereby avoiding the need of additional aiming light sources.

The above analysis shows that the special technical features of the above mentioned four subjects STF1 (subject I), STF2 (subject II), STF3 (subject III) and STF4 (subject IV) are different. Furthermore, the related technical problems are different and therefore STF1, STF2, STF3 and STF4 fail to demonstrate a technical correspondence with each other as required by Rule 13 PCT.

#### **Re Item V**

**Reasoned statement with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement**

#### **1. Clarity (Art. 6 PCT).**

##### **Claims 1-10**

The subject-matter of claims 1-10 should have been limited to digital scanning devices for decoding a digitally encoded symbol, because this is the only technical field mentioned in the description as support for these claims. The actual formulation of claims 1-10 is too broad and therefore not supported by the description, contrary to the requirements of Article 6 PCT.

From the INTERNATIONAL SEARCHING AUTHORITY

**PCT**

To:

QUARLES & BRADY LLP  
Attn. Flynn, Terri S.  
411 East Wisconsin Avenue  
Milwaukee, WI 53202  
UNITED STATES OF AMERICA

NOTIFICATION OF TRANSMITTAL OF  
THE INTERNATIONAL SEARCH REPORT AND  
THE WRITTEN OPINION OF THE INTERNATIONAL  
SEARCHING AUTHORITY, OR THE DECLARATION

(PCT Rule 44.1)

Date of mailing  
(day/month/year)

24/02/2005

Applicant's or agent's file reference

(210736.00003)

**FOR FURTHER ACTION**

See paragraphs 1 and 4 below

International application No.

PCT/US2004/034872

International filing date  
(day/month/year)

21/10/2004

Applicant

COGNEX TECHNOLOGY AND INVESTMENT CORPORATION

1. ☒ The applicant is hereby notified that the international search report and the written opinion of the International Searching Authority have been established and are transmitted herewith.

**Filing of amendments and statement under Article 19:**

The applicant is entitled, if he so wishes, to amend the claims of the International Application (see Rule 46):

**When?** The time limit for filing such amendments is normally 2 months from the date of transmittal of the International Search Report; however, for more details, see the notes on the accompanying sheet.

**Where?** Directly to the International Bureau of WIPO, 34 chemin des Colombettes  
1211 Geneva 20, Switzerland, Facsimile No.: (41-22) 740.14.35

**For more detailed instructions,** see the notes on the accompanying sheet.

2. ☐ The applicant is hereby notified that no international search report will be established and that the declaration under Article 17(2)(a) to that effect and the written opinion of the International Searching Authority are transmitted herewith.

3. ☐ **With regard to the protest** against payment of (an) additional fee(s) under Rule 40.2, the applicant is notified that:

- ☐ the protest together with the decision thereon has been transmitted to the International Bureau together with the applicant's request to forward the texts of both the protest and the decision thereon to the designated Offices.  
☐ no decision has been made yet on the protest; the applicant will be notified as soon as a decision is made.

**4. Reminders**

Shortly after the expiration of 18 months from the priority date, the International application will be published by the International Bureau. If the applicant wishes to avoid or postpone publication, a notice of withdrawal of the International application, or of the priority claim, must reach the International Bureau as provided in Rules 90bis.1 and 90bis.3, respectively, before the completion of the technical preparations for international publication.

The applicant may submit comments on an informal basis on the written opinion of the International Searching Authority to the International Bureau. The International Bureau will send a copy of such comments to all designated Offices unless an international preliminary examination report has been or is to be established. These comments would also be made available to the public but not before the expiration of 30 months from the priority date.

Within 19 months from the priority date, but only in respect of some designated Offices, a demand for international preliminary examination must be filed if the applicant wishes to postpone the entry into the national phase until 30 months from the priority date (in some Offices even later); otherwise, the applicant must, within 20 months from the priority date, perform the prescribed acts for entry into the national phase before those designated Offices.

In respect of other designated Offices, the time limit of 30 months (or later) will apply even if no demand is filed within 19 months.

See the Annex to Form PCT/IB/301 and, for details about the applicable time limits, Office by Office, see the *PCT Applicant's Guide*, Volume II, National Chapters and the WIPO Internet site.

Name and mailing address of the International Searching Authority



European Patent Office, P.B. 5818 Patentlaan 2  
NL-2280 HV Rijswijk  
Tel. (+31-70) 340-2040, Tx. 31 651 epo nl,  
Fax: (+31-70) 340-3016

Authorized officer

Eric Walsh

FEB 28 2005

## PCT

## INTERNATIONAL SEARCH REPORT

(PCT Article 18 and Rules 43 and 44)

Applicant's or agent's file reference (210736.00003)	<b>FOR FURTHER ACTION</b> see Form PCT/ISA/220 as well as, where applicable, item 5 below.	
International application No. PCT/US2004/034872	International filing date (day/month/year) 21/10/2004	(Earliest) Priority Date (day/month/year) 24/10/2003
Applicant COGNEX TECHNOLOGY AND INVESTMENT CORPORATION		

This International Search Report has been prepared by this International Searching Authority and is transmitted to the applicant according to Article 18. A copy is being transmitted to the International Bureau.

This International Search Report consists of a total of 4 sheets.



It is also accompanied by a copy of each prior art document cited in this report.

## 1. Basis of the report

- a. With regard to the language, the International search was carried out on the basis of the international application in the language in which it was filed, unless otherwise indicated under this item.



The International search was carried out on the basis of a translation of the international application furnished to this Authority (Rule 23.1(b)).

- b. ☐ With regard to any nucleotide and/or amino acid sequence disclosed in the international application, see Box No. I.

2. ☐ Certain claims were found unsearchable (See Box II).

3. ☐ Unity of invention is lacking (see Box III).

## 4. With regard to the title,



the text is approved as submitted by the applicant.



the text has been established by this Authority to read as follows:

## 5. With regard to the abstract,



the text is approved as submitted by the applicant.



the text has been established, according to Rule 38.2(b), by this Authority as it appears in Box No. IV. The applicant may, within one month from the date of mailing of this International search report, submit comments to this Authority.

## 6. With regard to the drawings,

- a. the figure of the drawings to be published with the abstract is Figure No. 1



as suggested by the applicant.



as selected by this Authority, because the applicant failed to suggest a figure.



as selected by this Authority, because this figure better characterizes the invention.

- b. ☐ none of the figures is to be published with the abstract.

## INTERNATIONAL SEARCH REPORT

International Application No

PCT/US2004/034872

**A. CLASSIFICATION OF SUBJECT MATTER**

IPC 7 G06K7/10

According to International Patent Classification (IPC) or to both national classification and IPC

**B. FIELDS SEARCHED**

Minimum documentation searched (classification system followed by classification symbols)

IPC 7 G06K

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)

EPO-Internal, PAJ, WPI Data

**C. DOCUMENTS CONSIDERED TO BE RELEVANT**

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	DE 101 13 426 A1 (GAVITEC GMBH) 26 September 2002 (2002-09-26)  paragraphs '0001!, '0024!, '0025! paragraphs '0031!, '0033! paragraphs '0045! - '0048! paragraphs '0055!, '0056!, '0059! paragraphs '0062!, '0063! paragraphs '0074!, '0075! paragraph '0083! figures 1, 2a, 2b, 5  ----- -/--	1-20, 24, 25, 29, 30, 33-42



Further documents are listed in the continuation of box C.



Patent family members are listed in annex.

**\* Special categories of cited documents:****\*A** document defining the general state of the art which is not considered to be of particular relevance**\*E** earlier document but published on or after the international filing date**\*L** document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)**\*O** document referring to an oral disclosure, use, exhibition or other means**\*P** document published prior to the international filing date but later than the priority date claimed**\*T** later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention**\*X** document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone**\*Y** document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art.**\*Z** document member of the same patent family

Date of the actual completion of the international search

17 February 2005

Date of mailing of the international search report

24/02/2005

Name and mailing address of the ISA

 European Patent Office, P.B. 5818 Patentlaan 2  
 NL - 2280 HV Rijswijk  
 Tel. (+31-70) 340-2040, Tx. 31 651 epo nl,  
 Fax: (+31-70) 340-3016

Authorized officer

Meister, M

## INTERNATIONAL SEARCH REPORT

International Application No  
PCT/US2004/034872

## C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	US 6 394 349 B1 (SHIGEKUSA HISASHI ET AL) 28 May 2002 (2002-05-28)  column 1, lines 30-35 column 1, line 66 - column 2, line 2 column 2, line 61 - column 3, line 5 column 4, lines 37-52 column 7, line 61 - column 8, line 27 column 10, lines 59-61 figures 5,8  -----	1-11, 14-20, 22,29, 30,35, 38-42
X	US 2001/027999 A1 (LEE JASON J) 11 October 2001 (2001-10-11)	17-23, 25-32, 34-42
A	paragraphs '0050!, '0051!, '0053! paragraphs '0056!, '0058!, '0059! paragraphs '0064! - '0066! paragraph '0070! paragraphs '0076! - '0078! paragraphs '0081! - '0083! paragraphs '0087!, '0088! paragraph '0090! figures 1,15  -----	15,16
A	WO 00/16073 A (ROBOTIC VISION SYSTEMS INC) 23 March 2000 (2000-03-23)  page 21, line 23 - page 22, line 13 figures 20,21  -----	17-23, 25-32, 34-42
A	WO 99/49347 A (AUTO IMAGE ID, INC) 30 September 1999 (1999-09-30) figures 1,3  -----	9,30,35

# INTERNATIONAL SEARCH REPORT

Information on patent family members

International Application No

PCT/US2004/034872

Patent document cited in search report		Publication date	Patent family member(s)	Publication date
DE 10113426	A1	26-09-2002	WO 02075637 A1 DE 10291122 D2	26-09-2002 15-04-2004
US 6394349	B1	28-05-2002	JP 3228197 B2 JP 11120284 A	12-11-2001 30-04-1999
US 2001027999	A1	11-10-2001	AU 7489201 A WO 0195012 A1 AU 6495099 A CA 2343311 A1 EP 1112547 A1 WO 0016156 A1	17-12-2001 13-12-2001 03-04-2000 23-03-2000 04-07-2001 23-03-2000
WO 0016073	A	23-03-2000	US 6661521 B1 AU 6382599 A CA 2343264 A1 EP 1112483 A1 JP 2002525644 T WO 0016073 A1 US 6429934 B1	09-12-2003 03-04-2000 23-03-2000 04-07-2001 13-08-2002 23-03-2000 06-08-2002
WO 9949347	A	30-09-1999	AU 3090199 A CA 2324626 A1 EP 1064580 A1 JP 2002507779 T NO 20004706 A WO 9949347 A1	18-10-1999 30-09-1999 03-01-2001 12-03-2002 27-10-2000 30-09-1999

# PATENT COOPERATION TREATY

From the  
INTERNATIONAL SEARCHING AUTHORITY

To:

see form PCT/ISA/220

# PCT

WRITTEN OPINION OF THE  
INTERNATIONAL SEARCHING AUTHORITY  
(PCT Rule 43bis.1)

Date of mailing  
(day/month/year) see form PCT/ISA/210 (second sheet)

Applicant's or agent's file reference  
see form PCT/ISA/220

**FOR FURTHER ACTION**  
See paragraph 2 below

International application No.  
PCT/US2004/034872

International filing date (day/month/year)  
21.10.2004

Priority date (day/month/year)  
24.10.2003

International Patent Classification (IPC) or both national classification and IPC  
G06K7/10

Applicant  
COGNEX TECHNOLOGY AND INVESTMENT CORPORATION

1. This opinion contains indications relating to the following items:

- ☒ Box No. I Basis of the opinion
- ☒ Box No. II Priority
- ☐ Box No. III Non-establishment of opinion with regard to novelty, inventive step and industrial applicability
- ☐ Box No. IV Lack of unity of invention
- ☒ Box No. V Reasoned statement under Rule 43bis.1(a)(i) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement
- ☐ Box No. VI Certain documents cited
- ☐ Box No. VII Certain defects in the international application
- ☐ Box No. VIII Certain observations on the international application

2. **FURTHER ACTION**

If a demand for international preliminary examination is made, this opinion will usually be considered to be a written opinion of the International Preliminary Examining Authority ("IPEA"). However, this does not apply where the applicant chooses an Authority other than this one to be the IPEA and the chosen IPEA has notified the International Bureau under Rule 66.1bis(b) that written opinions of this International Searching Authority will not be so considered.

If this opinion is, as provided above, considered to be a written opinion of the IPEA, the applicant is invited to submit to the IPEA a written reply together, where appropriate, with amendments, before the expiration of three months from the date of mailing of Form PCT/ISA/220 or before the expiration of 22 months from the priority date, whichever expires later.

For further options, see Form PCT/ISA/220.

3. For further details, see notes to Form PCT/ISA/220.

Name and mailing address of the ISA:



European Patent Office - P.B. 5818 Patentlaan 2  
NL-2280 HV Rijswijk - Pays Bas  
Tel. +31 70 340 - 2040 Tx: 31 651 epo nl  
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**WRITTEN OPINION OF THE  
INTERNATIONAL SEARCHING AUTHORITY**

International application No.  
PCT/US2004/034872

---

**Box No. I Basis of the opinion**

---

1. With regard to the **language**, this opinion has been established on the basis of the international application in the language in which it was filed, unless otherwise indicated under this item.
  - ☐ This opinion has been established on the basis of a translation from the original language into the following language , which is the language of a translation furnished for the purposes of international search (under Rules 12.3 and 23.1(b)).
2. With regard to any **nucleotide and/or amino acid sequence** disclosed in the international application and necessary to the claimed invention, this opinion has been established on the basis of:
  - a. type of material:
    - ☐ a sequence listing
    - ☐ table(s) related to the sequence listing
  - b. format of material:
    - ☐ in written format
    - ☐ in computer readable form
  - c. time of filing/furnishing:
    - ☐ contained in the international application as filed.
    - ☐ filed together with the international application in computer readable form.
    - ☐ furnished subsequently to this Authority for the purposes of search.
3. ☐ In addition, in the case that more than one version or copy of a sequence listing and/or table relating thereto has been filed or furnished, the required statements that the information in the subsequent or additional copies is identical to that in the application as filed or does not go beyond the application as filed, as appropriate, were furnished.
4. Additional comments:

**WRITTEN OPINION OF THE  
INTERNATIONAL SEARCHING AUTHORITY**

International application No.  
PCT/US2004/034872

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**Box No. II Priority**

---

1. ☒ The following document has not been furnished:

- ☒ copy of the earlier application whose priority has been claimed (Rule 43*bis*.1 and 66.7(a)).
- ☐ translation of the earlier application whose priority has been claimed (Rule 43*bis*.1 and 66.7(b)).

Consequently it has not been possible to consider the validity of the priority claim. This opinion has nevertheless been established on the assumption that the relevant date is the claimed priority date.

2. ☐ This opinion has been established as if no priority had been claimed due to the fact that the priority claim has been found invalid (Rules 43*bis*.1 and 64.1). Thus for the purposes of this opinion, the international filing date indicated above is considered to be the relevant date.
3. ☐ It has not been possible to consider the validity of the priority claim because a copy of the priority document was not available to the ISA at the time that the search was conducted (Rule 17.1). This opinion has nevertheless been established on the assumption that the relevant date is the claimed priority date.
4. Additional observations, if necessary:

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**Box No. V Reasoned statement under Rule 43*bis*.1(a)(i) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement**

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1. Statement

Novelty (N)	Yes: Claims	2,3,5-7,9,11,13-16,18-20,24,35,37,40
	No: Claims	1,4,8,10,12,17,21-23,25-34,36,38,39,41,42
Inventive step (IS)	Yes: Claims	
	No: Claims	1-42
Industrial applicability (IA)	Yes: Claims	1-42
	No: Claims	

2. Citations and explanations

**see separate sheet**

Reference is made to the following documents:

- D1: DE 101 13 426 A1 (GAVITEC GMBH) 26 September 2002 (2002-09-26)
- D2: US-B1-6 394 349 (SHIGEKUSA HISASHI ET AL) 28 May 2002 (2002-05-28)
- D3: US 2001/027999 A1 (LEE JASON J) 11 October 2001 (2001-10-11)
- D4: WO 00/16073 A (ROBOTIC VISION SYSTEMS INC) 23 March 2000 (2000-03-23)
- D5: WO 99/49347 A (AUTO IMAGE ID, INC) 30 September 1999 (1999-09-30)

**Re Item V**

**Reasoned statement with regard to novelty, inventive step or industrial applicability;  
citations and explanations supporting such statement**

**1. Clarity (Art. 6 PCT).**

**Claims 1, 30, 39**

Although claims 1, 30, 39 have been drafted as separate independent claims, they appear to relate effectively to the same subject-matter and to differ from each other only with regard to the definition of the subject-matter for which protection is sought. The aforementioned claims therefore lack conciseness and as such do not meet the requirements of Article 6 PCT.

**Claim 20**

Claim 20 should depend on claim 19 as "the stored illumination setting" is first mentioned in claim 19.

**Claims 35-38**

Claims 35-38, which are dependent on claim 30, refer to an "illuminator" while claim 30 refers to a "digital scanning device". Due to this inconsistency the subject-matter of claims 35-38 is unclear and therefore does not meet the requirements of Article 6 PCT.

**1. Novelty (Art. 33 (2) PCT).**

Claim 1

The document D1 discloses (the references in parentheses applying to this document):

a digital scanning device for decoding a digitally encoded symbol (par. 0001) comprising:  
a light source comprising a plurality of individually-controllable lighting elements for providing dark field illumination to an encoded data symbol (par. 0025, par. 0055-0056, par. 0075, par. 0083, lin. 21-25; fig. 2a, 2b, 5);  
an image sensor for detecting image data reflected from encoded data symbol when illuminated by the light source (par. 0074, fig. 1); and  
a controller connected to each of the individually-controllable lighting elements (par. 0031, par. 0033), the controller being programmed to selectively activate the lighting elements to vary the lighting provided by the light source on the data encoded symbol and to process the image data collected by the image sensor to decode the symbol (par. 0047, 0048).

As all the features of claim 1 are present in the same combination in document D1, the subject-matter of claim 1 is not new (Article 33 (2) PCT).

The subject-matter of claim 1 is not new (Article 33 (2) PCT) also over the disclosure of document D2 (see the cited passages in the International Search Report). It is pointed out that the individually-controllable lighting elements of document D2 provide a dark field illumination to the encoded data symbol because they eliminate mirror reflections from the encoded data symbol (col. 1, lin. 30-35, col. 1, lin. 66 - col. 2, lin. 2).

Claim 17

The document D1 discloses (the references in parentheses applying to this document):

a method for decoding an encoded data symbol (par. 0059), the method comprising the following steps:

- (a) arranging a plurality of individually-controllable lighting elements around an encoded data symbol to provide at least one of a dark field and a bright field illumination on an illumination surface (par. 0024-0025, par. 0045-0046, par. 0055-0056, par. 0075, par. 0083; fig. 2a, 2b, 5);
- (b) illuminating the data encoded symbol with at least one of the individually controllable lighting elements (par. 0031, par. 0033);
- (c) acquiring an image data set (par. 0047, par. 0048, par. 0062, par. 0063, par. 0074, fig. 1);
- (d) evaluating the image data set to determine suitability for decoding (par. 0047, par. 0048, par. 0062, par. 0063);
- (e) selectively varying a lighting parameter for varying the light emitted from individually-controllable lighting elements to vary the illumination on the data encoded symbol (par. 0047, par. 0048, par. 0062, par. 0063);
- (f) repeating steps (d) and (e) until the image data set is suitable for decoding.

As all the features of claim 17 are present in the same combination in document D1, the subject-matter of claim 17 is not new (Article 33 (2) PCT).

It is pointed out, that the steps (d) and (f) are considered to be implicitly disclosed by document D1, which discloses that the light projected from the individually-controllable lighting elements is varied according to several combinations (par. 0047, lin. 57-62, par. 0062, lin. 52-57, par. 63) and that said variation of the projected light is controlled by the decoding unit of the digital scanning device (par. 0047, lin. 62-66). For the same reasons mentioned above, the subject-matter of claim 17 does not in any case involve an inventive step over the disclosure of document D1 (Art. 33(3) PCT), because it is obvious to vary the projected light until a symbol decoding is obtained, i.e. until the image data set is suitable for decoding, which implies steps (d) and (f). This is also known from document D2 (col. 1, lin. 30-35, col. 1, lin. 66 - col. 2, lin. 2, col. 2, lin. 61 - col. 3, lin. 5, col. 4, lin. 37-52, col. 7, lin. 61 - col. 8, lin. 27) and document D3 (par. 0056, 0076-0078, 0087, 0088, 0090).

The subject-matter of claim 17 is not new (Article 33 (2) PCT) also over the

disclosure of document D2 (see the cited passages in the International Search Report). It is pointed out that the individually-controllable lighting elements of document D2 provide a dark field illumination to the encoded data symbol because they eliminate mirror reflections from the encoded data symbol (col. 1, lin. 30-35, col. 1, lin. 66 - col. 2, lin. 2).

The subject-matter of claim 17 is also not new over the disclosure of document D3, which discloses (the references in parentheses applying to this document):

a method for decoding an encoded data symbol, the method comprising the following steps:

- (a) arranging a plurality of individually-controllable lighting elements around an encoded data symbol to provide at least one of a dark field and a bright field illumination on an illumination surface (par. 0058, 0059);
- (b) illuminating the data encoded symbol with at least one of the individually controllable lighting elements (par. 0051, 0056, 0064, 0065, 0066);
- (c) acquiring an image data set (par. 0064, 0065, 0066);
- (d) evaluating the image data set to determine suitability for decoding (par. 0076-0078, 0081-0083);
- (e) selectively varying a lighting parameter for varying the light emitted from individually-controllable lighting elements to vary the illumination on the data encoded symbol (par. 0087, 0088, 0090);
- (f) repeating steps (d) and (e) until the image data set is suitable for decoding (par. 0076-0078, 0081-0083).

It is pointed out, that the feature according to which the plurality of individually-controllable lighting elements are arranged around the encoded data symbol is considered to be implicitly disclosed in document D3. As a matter of fact document D3 explicitly refers to the application file US Ser. No. 09/151,765 for providing more details on the illumination system (par. 0059). Document D4, which has the application file US Ser. No. 09/151,765 as single priority, discloses that the plurality of individually-controllable lighting elements are arranged around the encoded data symbol (pag. 21, lin. 23 - pag. 22, lin. 13; fig. 20, 21). It is also pointed out, that arranging a plurality of individually-controllable lighting elements around the encoded

data symbol for providing a dark and/or bright field illumination is regarded in any case as a matter of normal design option, which is also well-known in the art, see for example documents D1 or D4, and therefore not inventive (Art. 33(3) PCT).

Claim 30

The document D1 discloses (the references in parentheses applying to this document):

a digital scanning device (par. 0001), comprising:  
a ring light source providing dark field illumination to an adjacent surface including a symbol to be decoded (par. 0025, par. 0055-0056, par. 0075, par. 0083, lin. 21-25; fig. 2a, 2b, 5);  
a controller connected to the ring light source for selectively varying the light projected from the light source (par. 0031, par. 0033)  
an image sensor connected to the controller for acquiring image data of the symbol (par. 0074, fig. 1), wherein the controller is programmed to evaluate the image data to determine whether the image data is sufficient to decode the symbol and to vary the light projected from the light source until the image data is sufficient to decode the symbol (par. 0047, 0048).

As all the features of claim 30 are present in the same combination in document D1, the subject-matter of claim 30 is not new (Article 33 (2) PCT).

It is pointed out, that the feature according to which the controller is programmed to evaluate the image data to determine whether the image data is sufficient to decode the symbol and to vary the light projected from the light source until the image data is sufficient to decode the symbol is considered to be implicitly disclosed by document D1, which discloses that the light projected from the light source is varied according to several combinations (par. 0047, lin. 57-62) and that said variation of the projected light is controlled by the decoding unit of the digital scanning device (par. 0047, lin. 62-66). For the same reasons mentioned above, the subject-matter of claim 30 does not in any case involve an inventive step over the disclosure of document D1 (Art. 33(3) PCT), because it is obvious to vary the projected light until a symbol decoding

is obtained. This is also known from document D2 (col. 1, lin. 30-35, col. 1, lin. 66 - col. 2, lin. 2, col. 2, lin. 61 - col. 3, lin. 5, col. 4, lin. 37-52, col. 7, lin. 61 - col. 8, lin. 27) and document D3 (par. 0056, 0076-0078, 0087, 0088, 0090).

The subject-matter of claim 30 is not new (Article 33 (2) PCT) also over the disclosure of document D2 (see the cited passages in the International Search Report). It is pointed out that the individually-controllable lighting elements of document D2 provide a dark field illumination to the encoded data symbol because they eliminate mirror reflections from the encoded data symbol (col. 1, lin. 30-35, col. 1, lin. 66 - col. 2, lin. 2).

The subject-matter of claim 30 is also not new over the disclosure of document D3, which discloses (the references in parentheses applying to this document):

a digital scanning device (par. 0050, 0053; fig. 1), comprising:  
a ring light source providing dark field illumination to an adjacent surface including a symbol to be decoded (par. 0058, 0059);  
a controller connected to the ring light source for selectively varying the light projected from the light source (par. 0070; fig. 15)  
an image sensor connected to the controller for acquiring image data of the symbol (par. 0064-0066), wherein the controller is programmed to evaluate the image data to determine whether the image data is sufficient to decode the symbol and to vary the light projected from the light source until the image data is sufficient to decode the symbol (par. 0076-0078, 0081-0083, 0087, 0088, 0090).

It is pointed out, that the feature according to which the light source is a ring light source is considered to be implicitly disclosed in document D3. As a matter of fact document D3 explicitly refers to the application file US Ser. No. 09/151,765 for providing more details on the illumination system (par. 0059). Document D4, which has the application file US Ser. No. 09/151,765 as single priority, discloses that the light source is a ring light source (pag. 21, lin. 23 - pag. 22, lin. 13; fig. 20, 21). It is also pointed out, that using a ring light source for providing a dark field illumination is regarded in any case as a matter of normal design option, which is also well-known in the art, see for example documents D1, D4 or D5, and therefore not inventive (Art.



33(3) PCT).

Claim 39

The subject-matter of claim 39 differs from the one of claim 30 in that the light source is an arcuate light source instead of a ring light source. Anyway, as a ring light source is also an arcuate light source, the objections raised in respect of claim 30 also apply, mutatis mutandis, to claim 39 which is thus not new (Article 33(2) PCT) and, in any case, not inventive (Article 33(3) PCT).

Claims 4, 8, 12, 25, 29, 33, 34, 36, 38, 41, 42

The subject-matter of dependent claims 4, 8, 12, 25, 29, 33, 34, 36, 38, 41, 42 is also not new (Article 33 (2) PCT) because the same additional features are present in the same combination in document D1:

- Claim 4: par. 0075, par. 0083, fig. 5;
- Claim 8: see explanation regarding the implicit features of claim 30. The same objections for claim 30 apply, mutatis mutandis, to claim 8, whose subject-matter is thus not new (Art. 33(2) PCT) and does not involve an inventive step (Art. 33(3) PCT);
- Claims 12, 36: par. 0083, fig. 5;
- Claim 25: par. 0062;
- Claim 29: par. 0047, 0048;
- Claim 33: see explanation regarding the implicit features of claim 30. The same objections for claim 30 apply, mutatis mutandis, to claim 33, whose subject-matter is thus not new (Art. 33(2) PCT) and does not involve an inventive step (Art. 33(3) PCT);
- Claim 34: par. 0062, 0063;
- Claim 38: par. 0047, 0048, par. 0074, fig. 1;
- Claim 41: par. 0075, fig. 5;
- Claim 42: par. 0025, par. 0055-0056, par. 0075, par. 0083, lin. 21-25; fig. 2a, 2b, 5.

Claims 4, 8, 10, 22, 29, 38, 41, 42

The subject-matter of dependent claims 4, 8, 10, 22, 29, 38, 41, 42 is also not new (Article 33 (2) PCT) because the same additional features are present in the same combination in document D2:

- Claim 4: col. 4, lin. 37-52, col. 10, lin. 59-61, fig. 5;
- Claim 8: col. 7, lin. 61 - col. 8, lin. 27, fig. 8;
- Claim 10: col. 2, lin. 61 - col. 3, lin. 5;
- Claim 22: col. 7, lin. 61 - col. 8, lin. 27, fig. 8;
- Claim 29: col. 4, lin. 37-52, col. 7, lin. 61 - col. 8, lin. 27, fig. 8;
- Claim 38: col. 2, lin. 60 - col. 3, lin. 5, col. 4, lin. 37-52, col. 7, lin. 61 - col. 8, lin. 27;
- Claims 41, 42: col. 4, lin. 37-52, col. 10, lin. 59-61, fig. 5.

### Claims

The subject-matter of dependent claims is also not new (Article 33 (2) PCT) because the same additional features are present in the same combination in document D3:

- Claims 21, 31: par. 0087;
- Claims 22, 23: par. 0076-0078, 0081-0083;
- Claim 25: par. 0066;
- Claims 26, 27: par. 0090;
- Claim 28: par. 0081-0083, 0088;
- Claim 29: par. 0066;
- Claim 32: par. 0076-0078, 0081-0083;
- Claim 34: par. 0058, 0059, 0066;
- Claim 38: par. 0064;
- Claim 41: par. 0059, see also the explanation for the implicit feature of claim 30;

## **2. Inventive Step (Art. 33 (3) PCT).**

### Claims 2, 3, 5-7, 9, 11, 13-16, 18-20, 24, 35, 37, 40

Dependent claims 2, 3, 5-7, 9, 11, 13-16, 18-20, 24, 35, 37 and 40 do not appear to contain any additional features which, in combination with the features of any claim to

which they refer, meet the requirements of the PCT with respect to inventive step.

The reasons are the following:

- Claims 2, 3, 5-7, 18, 24, 37, 40: the additional or alternative features of claims 2, 3, 5-7, 18, 24, 37 and 40 are a matter of normal design option;
- Claims 9, 35: the additional or alternative features of claims 9 and 35 are a matter of normal design option, which is well known in the art, see for example document D5 (fig. 1, 3);
- Claim 11: the additional features of claim 11 are a matter of normal design option;
- Claim 13: the additional features of claim 13 are a matter of normal design option;
- Claims 14, 19, 20: the additional features of claims 14, 19 and 20 are a matter of normal design option;
- Claims 15, 16: the additional features of claims 15 and 16 are a matter of normal design option, which is well known in the art, see for example document D3 (par. 0090).

## NOTES TO FORM PCT/ISA/220

These Notes are intended to give the basic instructions concerning the filing of amendments under article 19. The Notes are based on the requirements of the Patent Cooperation Treaty, the Regulations and the Administrative Instructions under that Treaty. In case of discrepancy between these Notes and those requirements, the latter are applicable. For more detailed information, see also the PCT Applicant's Guide, a publication of WIPO.

In these Notes, "Article", "Rule", and "Section" refer to the provisions of the PCT, the PCT Regulations and the PCT Administrative Instructions respectively.

### INSTRUCTIONS CONCERNING AMENDMENTS UNDER ARTICLE 19

The applicant has, after having received the international search report, one opportunity to amend the claims of the international application. It should however be emphasized that, since all parts of the international application (claims, description and drawings) may be amended during the international preliminary examination procedure, there is usually no need to file amendments of the claims under Article 19 except where, e.g. the applicant wants the letter to be published for the purposes of provisional protection or has another reason for amending the claims before international publication. Furthermore, it should be emphasized that provisional protection is available in some States only.

#### What parts of the international application may be amended?

Under Article 19, only the claims may be amended.

During the international phase, the claims may also be amended (or further amended) under Article 34 before the International Preliminary Examining Authority. The description and drawings may only be amended under Article 34 before the International Examining Authority.

Upon entry into the national phase, all parts of the international application may be amended under Article 28 or, where applicable, Article 41.

#### When?

Within 2 months from the date of transmittal of the international search report or 16 months from the priority date, whichever time limit expires later. It should be noted, however, that the amendments will be considered as having been received on time if they are received by the International Bureau after the expiration of the applicable time limit but before the completion of the technical preparations for international publication (Rule 46.1).

#### Where not to file the amendments?

The amendments may only be filed with the International Bureau and not with the receiving Office or the International Searching Authority (Rule 46.2).

Where a demand for international preliminary examination has been/is filed, see below.

#### How?

Either by cancelling one or more entire claims, by adding one or more new claims or by amending the text of one or more of the claims as filed.

A replacement sheet must be submitted for each sheet of the claims which, on account of an amendment or amendments, differs from the sheet originally filed.

All the claims appearing on a replacement sheet must be numbered in Arabic numerals. Where a claim is cancelled, no renumbering of the other claims is required. In all cases where claims are renumbered, they must be renumbered consecutively (Administrative Instructions, Section 205(b)).

The amendments must be made in the language in which the international application is to be published.

#### What documents must/may accompany the amendments?

##### Letter (Section 295(b)):

The amendments must be submitted with a letter.

The letter will not be published with the international application and the amended claims. It should not be confused with the "Statement under Article 19(1)" (see below, under "Statement under Article 19(1)").

The letter must be in English or French, at the choice of the applicant. However, if the language of the international application is English, the letter must be in English; if the language of the international application is French, the letter must be in French.

## NOTES TO FORM PCT/ISA/220 (continued)

The letter must indicate the difference between the claims as filed and the claims as amended. It must, in particular, indicate, in connection with each claim appearing in the international application (it being understood that identical indications concerning several claims may be grouped), whether

- (i) the claim is unchanged;
- (ii) the claim is cancelled;
- (iii) the claim is new;
- (iv) the claim replaces one or more claims as filed;
- (v) the claim is the result of the division of a claim as filed.

The following examples illustrate the manner in which amendments must be explained in the accompanying letter:

1. [Where originally there were 48 claims and after amendment of some claims there are 51]:  
"Claims 1 to 29, 31, 32, 34, 35, 37 to 48 replaced by amended claims bearing the same numbers; claims 30, 33 and 36 unchanged; new claims 49 to 51 added."
2. [Where originally there were 15 claims and after amendment of all claims there are 11]:  
"Claims 1 to 15 replaced by amended claims 1 to 11."
3. [Where originally there were 14 claims and the amendments consist in cancelling some claims and in adding new claims]:  
"Claims 1 to 6 and 14 unchanged; claims 7 to 13 cancelled; new claims 15, 16 and 17 added." or  
"Claims 7 to 13 cancelled; new claims 15, 16 and 17 added; all other claims unchanged."
4. [Where various kinds of amendments are made]:  
"Claims 1-10 unchanged; claims 11 to 13, 18 and 19 cancelled; claims 14, 15 and 16 replaced by amended claim 14; claim 17 subdivided into amended claims 15, 16 and 17; new claims 20 and 21 added."

### "Statement under article 19(1)" (Rule 48.4)

The amendments may be accompanied by a statement explaining the amendments and indicating any impact that such amendments might have on the description and the drawings (which cannot be amended under Article 19(1)).

The statement will be published with the international application and the amended claims.

It must be in the language in which the international application is to be published.

It must be brief, not exceeding 500 words if in English or if translated into English.

It should not be confused with and does not replace the letter indicating the differences between the claims as filed and as amended. It must be filed on a separate sheet and must be identified as such by a heading, preferably by using the words "Statement under Article 19(1)".

It may not contain any disparaging comments on the international search report or the relevance of citations contained in that report. Reference to citations, relevant to a given claim, contained in the international search report may be made only in connection with an amendment of that claim.

### Consequence if a demand for international preliminary examination has already been filed

If, at the time of filing any amendments under Article 19, a demand for international preliminary examination has already been submitted, the applicant must preferably, at the same time of filing the amendments with the International Bureau, also file a copy of such amendments with the International Preliminary Examining Authority (see Rule 62.2(a), first sentence).

### Consequence with regard to translation of the international application for entry into the national phase

The applicant's attention is drawn to the fact that, where upon entry into the national phase, a translation of the claims as amended under Article 19 may have to be furnished to the designated/elected Office, instead of, or in addition to, the translation of the claims as filed.

For further details on the requirements of each designated/elected Office, see Volume II of the PCT Applicant's Guide.

From the INTERNATIONAL SEARCHING AUTHORITY

PCT

To:

CESARI AND MCKENNA, LLP  
Attn. Loginov, William A.  
88 Black Falcon Avenue  
Boston, Massachusetts 02210  
UNITED STATES OF AMERICA

RECEIVED

APR 18 2006

NOTIFICATION OF TRANSMITTAL OF  
THE INTERNATIONAL SEARCH REPORT AND  
THE WRITTEN OPINION OF THE INTERNATIONAL  
SEARCHING AUTHORITY, OR THE DECLARATION

JCC/MT

(PCT Rule 44.1)

Date of mailing  
(day/month/year)

12/04/2006

Applicant's or agent's file reference

104119-65PCT

CESARI &amp; MCKENNA

FOR FURTHER ACTION

See paragraphs 1 and 4 below

International application No.

PCT/US2005/044466

International filing date  
(day/month/year)

08/12/2005

Applicant

COGNEX TECHNOLOGY AND INVESTMENT CORPORATION

1. ☒ The applicant is hereby notified that the international search report and the written opinion of the International Searching Authority have been established and are transmitted herewith.

**Filing of amendments and statement under Article 19:**

The applicant is entitled, if he so wishes, to amend the claims of the International Application (see Rule 46):

**When?** The time limit for filing such amendments is normally two months from the date of transmittal of the International Search Report.

**Where?** Directly to the International Bureau of WIPO, 34 chemin des Colombettes  
1211 Geneva 20, Switzerland, Facsimile No.: (41-22) 338.82.70

For more detailed instructions, see the notes on the accompanying sheet.

2. ☐ The applicant is hereby notified that no international search report will be established and that the declaration under Article 17(2)(a) to that effect and the written opinion of the International Searching Authority are transmitted herewith.

3. ☐ With regard to the protest against payment of (an) additional fee(s) under Rule 40.2, the applicant is notified that:

- ☐ the protest together with the decision thereon has been transmitted to the International Bureau together with the applicant's request to forward the texts of both the protest and the decision thereon to the designated Offices.  
☐ no decision has been made yet on the protest; the applicant will be notified as soon as a decision is made.

**4. Reminders**

Shortly after the expiration of 18 months from the priority date, the International application will be published by the International Bureau. If the applicant wishes to avoid or postpone publication, a notice of withdrawal of the International application, or of the priority claim, must reach the International Bureau as provided in Rules 90bis.1 and 90bis.3, respectively, before the completion of the technical preparations for international publication.

The applicant may submit comments on an informal basis on the written opinion of the International Searching Authority to the International Bureau. The International Bureau will send a copy of such comments to all designated Offices unless an international preliminary examination report has been or is to be established. These comments would also be made available to the public but not before the expiration of 30 months from the priority date.

Within 19 months from the priority date, but only in respect of some designated Offices, a demand for international preliminary examination must be filed if the applicant wishes to postpone the entry into the national phase until 30 months from the priority date (in some Offices even later); otherwise, the applicant must, within 20 months from the priority date, perform the prescribed acts for entry into the national phase before those designated Offices.

In respect of other designated Offices, the time limit of 30 months (or later) will apply even if no demand is filed within 19 months.

See the Annex to Form PCT/B/301 and, for details about the applicable time limits, Office by Office, see the *PCT Applicant's Guide*, Volume II, National Chapters and the WIPO Internet site.

Name and mailing address of the International Searching Authority



European Patent Office, P.B. 5818 Patentlaan 2  
NL-2280 HV Rijswijk  
Tel. (+31-70) 340-2040, Tx. 31 651 epo nl,  
Fax: (+31-70) 340-3016

Authorized officer

Silvia Karpf

## NOTES TO FORM PCT/ISA/220

These Notes are intended to give the basic instructions concerning the filing of amendments under article 19. The Notes are based on the requirements of the Patent Cooperation Treaty, the Regulations and the Administrative Instructions under that Treaty. In case of discrepancy between these Notes and those requirements, the latter are applicable. For more detailed information, see also the *PCT Applicant's Guide*, a publication of WIPO.

In these Notes, "Article", "Rule", and "Section" refer to the provisions of the PCT, the PCT Regulations and the PCT Administrative Instructions, respectively.

### INSTRUCTIONS CONCERNING AMENDMENTS UNDER ARTICLE 19

The applicant has, after having received the international search report and the written opinion of the International Searching Authority, one opportunity to amend the claims of the international application. It should however be emphasized that, since all parts of the international application (claims, description and drawings) may be amended during the international preliminary examination procedure, there is usually no need to file amendments of the claims under Article 19 except where, e.g. the applicant wants the latter to be published for the purposes of provisional protection or has another reason for amending the claims before international publication. Furthermore, it should be emphasized that provisional protection is available in some States only (see *PCT Applicant's Guide*, Volume I/A, Annexes B1 and B2).

The attention of the applicant is drawn to the fact that amendments to the claims under Article 19 are not allowed where the International Searching Authority has declared, under Article 17(2), that no international search report would be established (see *PCT Applicant's Guide*, Volume I/A, paragraph 296).

#### What parts of the international application may be amended?

Under Article 19, only the claims may be amended.

During the international phase, the claims may also be amended (or further amended) under Article 34 before the International Preliminary Examining Authority. The description and drawings may only be amended under Article 34 before the International Examining Authority.

Upon entry into the national phase, all parts of the international application may be amended under Article 28 or, where applicable, Article 41.

#### When?

Within 2 months from the date of transmittal of the international search report or 16 months from the priority date, whichever time limit expires later. It should be noted, however, that the amendments will be considered as having been received on time if they are received by the International Bureau after the expiration of the applicable time limit but before the completion of the technical preparations for international publication (Rule 46.1).

#### Where not to file the amendments?

The amendments may only be filed with the International Bureau and not with the receiving Office or the International Searching Authority (Rule 46.2).

Where a demand for international preliminary examination has been/is filed, see below.

#### How?

Either by cancelling one or more entire claims, by adding one or more new claims or by amending the text of one or more of the claims as filed.

A replacement sheet must be submitted for each sheet of the claims which, on account of an amendment or amendments, differs from the sheet originally filed.

All the claims appearing on a replacement sheet must be numbered in Arabic numerals. Where a claim is cancelled, no renumbering of the other claims is required. In all cases where claims are renumbered, they must be renumbered consecutively (Section 205(b)).

The amendments must be made in the language in which the international application is to be published.

#### What documents must/may accompany the amendments?

##### **Letter (Section 205(b)):**

The amendments must be submitted with a letter.

The letter will not be published with the international application and the amended claims. It should not be confused with the "Statement under Article 19(1)" (see below, under "Statement under Article 19(1)").

The letter must be in English or French, at the choice of the applicant. However, if the language of the international application is English, the letter must be in English; if the language of the international application is French, the letter must be in French.

# PATENT COOPERATION TREATY

# PCT

## INTERNATIONAL SEARCH REPORT

(PCT Article 18 and Rules 43 and 44)

Applicant's or agent's file reference <b>104119-65PCT</b>	<b>FOR FURTHER ACTION</b> see Form PCT/ISA/220 as well as, where applicable, item 5 below.	
International application No. <b>PCT/US2005/044466</b>	International filing date (day/month/year) <b>08/12/2005</b>	(Earliest) Priority Date (day/month/year) <b>21/12/2004</b>
Applicant <b>COGNEX TECHNOLOGY AND INVESTMENT CORPORATION</b>		

This International search report has been prepared by this International Searching Authority and is transmitted to the applicant according to Article 18. A copy is being transmitted to the International Bureau.

This International search report consists of a total of 4 sheets.

☒ It is also accompanied by a copy of each prior art document cited in this report.

**1. Basis of the report**

a. With regard to the language, the international search was carried out on the basis of:

- ☒ the international application in the language in which it was filed  
☐ a translation of the international application into \_\_\_\_\_, which is the language of a translation furnished for the purposes of international search (Rule 12.3(a) and 23.1(b))

b. ☐ With regard to any nucleotide and/or amino acid sequence disclosed in the international application, see Box No. I.

2. ☐ Certain claims were found unsearchable (See Box No. II)

3. ☐ Unity of invention is lacking (see Box No. III)

4. With regard to the title,

- ☒ the text is approved as submitted by the applicant  
☐ the text has been established by this Authority to read as follows:

5. With regard to the abstract,

- ☒ the text is approved as submitted by the applicant  
☐ the text has been established, according to Rule 38.2(b), by this Authority as it appears in Box No. IV. The applicant may, within one month from the date of mailing of this international search report, submit comments to this Authority

6. With regard to the drawings,

- a. the figure of the drawings to be published with the abstract is Figure No. 6  
☒ as suggested by the applicant  
☐ as selected by this Authority, because the applicant failed to suggest a figure  
☐ as selected by this Authority, because this figure better characterizes the invention  
 b. ☐ none of the figures is to be published with the abstract



**A. CLASSIFICATION OF SUBJECT MATTER**  
 G06K7/10

According to International Patent Classification (IPC) or to both national classification and IPC

**B. FIELDS SEARCHED**

 Minimum documentation searched (classification system followed by classification symbols)  
 G06K

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)

EPO-Internal, WPI Data, PAJ

**C. DOCUMENTS CONSIDERED TO BE RELEVANT**

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	WO 01/63258 A (ROBOTIC VISION SYSTEMS, INC; STERN, HOWARD) 30 August 2001 (2001-08-30) figures 16-18 page 17, line 20 - page 21, line 16	1-9
Y		10
X	US 5 515 452 A (PENKETHMAN ET AL) 7 May 1996 (1996-05-07) figures 4-7 column 5, line 40 - column 9, line 31	1,3
X	US 6 385 507 B1 (BUIJTELS ANTONIUS GERARDUS JOHANNES WILHELMINA MARIA) 7 May 2002 (2002-05-07) figures 2-5 column 8, line 7 - column 11, line 35 -/-	5-9



Further documents are listed in the continuation of Box C.



See patent family annex.

## \* Special categories of cited documents:

- \*A\* document defining the general state of the art which is not considered to be of particular relevance
- \*E\* earlier document but published on or after the international filing date
- \*L\* document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (see specified)
- \*O\* document referring to an oral disclosure, use, exhibition or other means
- \*P\* document published prior to the international filing date but later than the priority date claimed

- \*T\* later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention
- \*X\* document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone
- \*Y\* document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art
- \*Z\* document member of the same patent family

Date of the actual completion of the international search

4 Apr11 2006

Date of mailing of the international search report

12/04/2006

Name and mailing address of the ISA/

 European Patent Office, P.B. 5618 Patentlaan 2  
 NL - 2280 HV Rijswijk  
 Tel. (+31-70) 340-2040, Tx. 31 651 epo nl,  
 Fax: (+31-70) 340-3016

Authorized officer

Grob, M

## C(Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
Y	US 3 961 198 A (AUNGST ET AL) 1 June 1976 (1976-06-01) figure 1 column 1, line 52 - column 2, line 42	10
X,P	WO 2005/043449 A (COGNEX TECHNOLOGY AND INVESTMENT CORPORATION; GERST, CARL, W., III; EQ) 12 May 2005 (2005-05-12) figure 8 paragraph [0042]	1-4

Patent document cited in search report		Publication date		Patent family member(s)		Publication date
WO 0163258	A	30-08-2001	AU	3864001 A		03-09-2001
			CA	2404153 A1		30-08-2001
			EP	1269157 A1		02-01-2003
US 5515452	A	07-05-1996	NONE			
US 6385507	B1	07-05-2002	WO	0101118 A1		04-01-2001
			JP	2003503701 T		28-01-2003
US 3961198	A	01-06-1976	NONE			
WO 2005043449	A	12-05-2005	US	2006032921 A1		16-02-2006

From the  
INTERNATIONAL SEARCHING AUTHORITY

PCT

see form PCT/ISA220

WRITTEN OPINION OF THE  
INTERNATIONAL SEARCHING AUTHORITY  
(PCT Rule 43bis.1)

Date of mailing  
(day/month/year) see form PCT/ISA210 (second sheet)

Applicant's or agent's file reference  
see form PCT/ISA220

FOR FURTHER ACTION  
See paragraph 2 below

International application No.  
PCT/US2005/044466

International filing date (day/month/year)  
08.12.2005

Priority date (day/month/year)  
21.12.2004

International Patent Classification (IPC) or both national classification and IPC  
INV. G06K7/10

Applicant  
COGNEX TECHNOLOGY AND INVESTMENT CORPORATION

1. This opinion contains indications relating to the following items:

- ☒ Box No. I Basis of the opinion
- ☐ Box No. II Priority
- ☐ Box No. III Non-establishment of opinion with regard to novelty, inventive step and industrial applicability
- ☐ Box No. IV Lack of unity of invention
- ☒ Box No. V Reasoned statement under Rule 43bis.1(a)(i) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement
- ☐ Box No. VI Certain documents cited
- ☒ Box No. VII Certain defects in the international application
- ☒ Box No. VIII Certain observations on the international application

2. FURTHER ACTION

If a demand for international preliminary examination is made, this opinion will usually be considered to be a written opinion of the International Preliminary Examining Authority ("IPEA"). However, this does not apply where the applicant chooses an Authority other than this one to be the IPEA and the chosen IPEA has notified the International Bureau under Rule 66.1b(s) that written opinions of this International Searching Authority will not be so considered.

If this opinion is, as provided above, considered to be a written opinion of the IPEA, the applicant is invited to submit to the IPEA a written reply together, where appropriate, with amendments, before the expiration of three months from the date of mailing of Form PCT/ISA220 or before the expiration of 22 months from the priority date, whichever expires later.

For further options, see Form PCT/ISA220.

3. For further details, see notes to Form PCT/ISA220.

9.21.06 - Cu: <sup>n</sup>  
10.21.06 - Due: <sup>n</sup> response to written <sup>n</sup> opinion

Name and mailing address of the ISA:



European Patent Office  
D-80298 Munich  
Tel. +49 89 2399 - 0 Tx: 523656 epmu d  
Fax: +49 89 2399 - 4465

Authorized Officer

Grob, M

Telephone No. +49 89 2399-2620



---

**Box No. I Basis of the opinion**

---

1. With regard to the **language**, this opinion has been established on the basis of the international application in the language in which it was filed, unless otherwise indicated under this item.
  - ☐ This opinion has been established on the basis of a translation from the original language into the following language , which is the language of a translation furnished for the purposes of international search (under Rules 12.3 and 23.1(b)).
2. With regard to any **nucleotide and/or amino acid sequence** disclosed in the international application and necessary to the claimed invention, this opinion has been established on the basis of:
  - a. type of material:
    - ☐ a sequence listing
    - ☐ table(s) related to the sequence listing
  - b. format of material:
    - ☐ in written format
    - ☐ in computer readable form
  - c. time of filing/furnishing:
    - ☐ contained in the international application as filed.
    - ☐ filed together with the international application in computer readable form.
    - ☐ furnished subsequently to this Authority for the purposes of search.
3. ☐ In addition, in the case that more than one version or copy of a sequence listing and/or table relating thereto has been filed or furnished, the required statements that the information in the subsequent or additional copies is identical to that in the application as filed or does not go beyond the application as filed, as appropriate, were furnished.
4. Additional comments:

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**Box No. V Reasoned statement under Rule 43b/s.1(a)(i) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement**

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1. Statement

Novelty (N)	Yes: Claims	6,7,10
	No: Claims	1-5,8,9
Inventive step (IS)	Yes: Claims	
	No: Claims	1-10
Industrial applicability (IA)	Yes: Claims	1-10
	No: Claims	

2. Citations and explanations

**see separate sheet**

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**Box No. VII Certain defects in the international application**

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The following defects in the form or contents of the international application have been noted:

**see separate sheet**

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**Box No. VIII Certain observations on the international application**

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The following observations on the clarity of the claims, description, and drawings or on the question whether the claims are fully supported by the description, are made:

**see separate sheet**

**Re Item V**

**Reasoned statement with regard to novelty, inventive step or industrial applicability;  
citations and explanations supporting such statement**

1. Reference is made to the following documents:

- D1: WO 01/63258 A (ROBOTIC VISION SYSTEMS, INC; STERN, HOWARD) 30 August 2001 (2001-08-30)
- D2: US-A-5 515 452 (PENKETHMAN ET AL) 7 May 1996 (1996-05-07)
- D3: US-B1-6 385 507 (BUIJTELS ANTONIUS GERARDUS JOHANNES WILHELMINA MARIA) 7 May 2002 (2002-05-07)
- D4: US-A-3 961 198 (AUNGST ET AL) 1 June 1976 (1976-06-01)
- D5: WO 2005/043449 A (COGNEX TECHNOLOGY AND INVESTMENT CORPORATION; GERST, CARL, W., III; EQ) 12 May 2005 (2005-05-12)

- 2. D1 discloses (cf figs. 16-18 and page 17, line 20 to page 21, line 16) a code scanner having bright field and dark field illumination. The reader comprises a camera engine 370, LEDs 462 disposed about the periphery of a carrier 464 and an illumination enhancing and directing attachment 310 inserted in the reader opening via the peripheral lip 502 of the front cover 484 of the housing 320. The illumination enhancing and directing attachment 310 comprises an outer ring 514 having a Fresnel surface 520 for directing light at a flat angle to the code. In other words, the LEDs 462 together with the Fresnel surface 520 produce dark field illumination. In an alternative embodiment (cf page 20, line 3 et seq.), the outer ring 514 is formed with arcuate Fresnel segments and arcuate clear segments. By rotating the illumination enhancing and directing attachment 310 either dark or bright field illumination is provided.
- 2.1 Bearing the alternative embodiment in paragraph 2 in mind, D1 discloses an industrial identification mark reader (cf Fig 18) comprising: a housing 320; an imaging module 370 positioned within the housing to capture an image of a mark on an object placed before the reader; an illuminator module comprising a plurality of selectively actuated illuminators 462, the illuminator module being mounted within the housing 320; and an integrated optical transmitter (light guiding means) 514, 520 mounted

within the housing, the integrated optical transmitter (light guiding means) 514,520 having a dark field illuminator transmitter (light guiding means) 514,520, the dark field illumination transmitter (light guiding means) 514,520 (the arcuate Fresnel segments) being in optical cooperation with at least one of the plurality of selectively actuated illuminators 462 to project dark field illumination on the object; and a bright field illumination transmitter (light guiding means) 520 (the arcuate clear segments), the bright field illumination transmitter (light guiding means) being in optical cooperation with at least one of the plurality of selectively actuated illuminators 462 to project bright field illumination on the object.

- 2.2 Hence, it follows that all of the features of claim 1 are known from D1. Hence, claim 1 does not meet the novelty requirements of Article 33(1) and (2) PCT.
- 2.3 With regard to the dependent claims 2-4, it is noted that the illumination enhancement and directing attachment 310 of D1 is removable, comprises a "light pipe" in the form of the arcuate Fresnel segments of the outer ring 514. The arcuate clear segments are within (between) the arcuate Fresnel segments. Hence, the subject-matter of each of the claims 2-4 is not new in the sense of Article 33(2) PCT.
3. The plastic moulded optical transmitter (light guiding means) of claim 5 can be read onto the outer ring 514 of the illumination enhancing and directing attachment 310 in D1. The outer ring 514 clearly has a structural frame, a dark field illumination transmitter (light guiding means) in the form of the arcuate Fresnel segments (cf page 20, line 3 et seq.) integrated into the frame and at least one bright field illumination transmitter (light guiding means) in the form of the arcuate clear segments integrated into the frame, and adjacent to the dark field illumination transmitter. Hence, it follows that the subject-matter of claim 5 is not new in the sense of Article 33(2) EPC.
- 3.1 The dependent claims 6-9 do not contain any features which, in combination with the features of any claim to which they refer, meet the requirements of the PCT in respect of novelty and/or inventive step. The choice of injection moulded clear plastics material and the type of plastics material for the outer ring 514 are considered to be obvious choices particularly in view of the use of clear plastics in the other embodiments of D1 (cf page 21, line 22). A window (opening) 510 is provided in



the illumination enhancing and directing attachment 310 of D1. The provision of a window operating also as a filter is considered to be a trivial aspect and is well known in this field of optical readers.

- 4 All of the features of claim 10 except for the viewing port are known from D1 (cf paragraph 2 above). However, bearing in mind that when the reader of D1 is used to read the code using dark field illumination, the housing of the reader will almost certainly obscure the code because the reader must be placed very close to the code in order to use the dark field illumination. D4 discloses (cf col 1, line 52 to col 2, line 42) an optical code reader in which the housing of the reader 10 also obscures the code when it is read. However, in D4 a viewing window 12 (cf figure 1) is provided in the housing of the reader to permit observation of the field of view by the user. Consequently, the subject-matter of claim 10 lacks an inventive step in the sense of Article 33(3) PCT in view of the straightforward combination of D1 and D4.
5. D2 discloses (cf Figs 4-7 and col 5, line 40 to col 9, line 31) an OCR reader having a bright field assembly 701 for illuminating a surface with bright field illumination at 85° to the surface (cf col 8, line 16) and a dark field assembly 702 (also 703) for illuminating the surface with dark field illumination at 10° to the surface (cf col 8, line 31). The assemblies 701,702(703) comprise the bright and dark field light guides 405 (Fig 5) and 600 (fig 6) respectively and corresponding LEDs 501,601. The reader further comprises a camera 750, filter 752 etc.
- 5.1 Bearing paragraph 5 in mind, all of the features of claim 1 apart from the housing can be explicitly found in D2. The feature of the housing is nevertheless considered to be implicit and/or obvious given that the OCR readers are usually provided as one complete apparatus in a single housing. Hence, the subject-matter of claim 1 lacks at least an inventive step in the sense of Article 33(3) PCT with regard to D2.
6. D3 discloses (cf Figs 2-5 and col 8, line 7 to col 11, line 35) an illumination module for illuminating components to be placed on a pcb. The module (fig 4) comprises three illumination rings 62-66 (with LEDs 50 cf Fig 5)) each having a corresponding radiation guide 72,80,90. The outer radiation guide 72 has an oblique upper surface 74 which causes light to be emitted at angles between 70° and 88° to the normal (i.e.

dark field illumination in the sense of the present application). The inner radiation guide 90 is combined with a diffuser 88 and emits light at angles between 20 and 40° to the normal. Although this document refers to the guide 90 as providing another type of dark field illumination, the angles fit the definition of "bright field illumination" in the application (cf page 2). Moreover, whether or not dark or bright field illumination is produced depends on whether the surface is specular or matt and the angle at which the reader reads the code. In addition, the radiation guides 72,80,90 are made of transparent synthetic resin (cf col 9, lines 26-29). A window 94 is provided above the camera Ca. The window can be a filter (cf col 11, line 20 et seq.).

- 6.1 In view of paragraph 6 above, D3 discloses a plastic moulded (made from clear resin) optical transmitter (light guiding means) suitable for use in a direct part mark reader. The optical transmitter (light guiding means) comprises: a structural frame 70; a dark field illumination transmitter (light guiding means) 72 integrated into the frame 70; and at least one bright field illumination transmitter (light guiding means) 90,88 integrated into the frame, and adjacent to the dark field illumination transmitter (light guiding means) 72.
- 6.2 Hence, it follows that the subject-matter of claim 5 is not new in the sense of Article 33(2) EPC.
- 6.3 The dependent claims 6-9 do not contain any features which, in combination with the features of any claim to which they refer, meet the requirements of the PCT in respect of novelty and/or inventive step. The choice of injection moulded clear plastics material and the type of plastics material for the radiation guides 72,90 and the diffuser 88 are considered to be obvious choices particularly in view of the use of transparent synthetic resin in D3 (cf col 9, lines 26-29). A window 94 is provided in D3 and this window can be a filter (cf D3 col 11, line 20 et seq.).
7. D5 discloses (cf Fig 8 and paragraph [0042]) a scanner arrangement comprising an inner ring of LEDs 802 mounted on a circuit board 806 and a light pipe 840 for providing bright field illumination. In addition, the arrangement comprises an outer ring of LEDs 804 mounted on the circuit board 806 and a light pipe 820 with an oblique tip 822 for providing dark field illumination. The scanning arrangement is

mounted inside the housing shown in figure 1. Hence, D5 anticipates all of the features of claims 1-4. It is further noted that D5 is only prior art in the sense of Rule 64(1) PCT if the priority date of the present application is not valid.

**Re Item VII**

**Certain defects in the international application**

8. Contrary to the requirements of Rule 5.1(a)(ii) PCT, the relevant background art disclosed in the documents D1-D4 is not mentioned in the description, nor are these documents identified therein.
- 8.1 The description (cf page 3) is not in conformity with the claims as required by Rule 5.1(a)(iii) PCT.
- 8.2 The features of the claims are not provided with reference signs placed in parentheses (Rule 6.2(b) PCT).
- 8.3 Contrary to the requirements of Rule 6.3(b) PCT, the independent claims 1,5,10 are not properly cast in the two-part form.

**Re Item VIII**

**Certain observations on the international application**

9. In claim 1 (cf line 7) the term "integrated optical **transmitter**" suggests that some type of active optical device such as a laser, LED etc. is involved. However, in the description the "illumination transmitter" 120 (which appears to correspond to said term in claim 1) comprises no active device but merely a moulded plastics part having a light guiding function (cf second and third paragraphs on page 6). Moreover, said term can easily be confused with the "selectively actuated illuminators" (cf line 5 of claim 1) which actually correspond to the LEDS 320,330! Hence, said term is not clear, contrary to Article 6 PCT.
- 9.1 The terms "dark field illumination **transmitter**" and "bright field illumination **transmitter**" (cf last paragraph of claim 1) are also unclear for essentially the same

reasons as those mentioned in paragraph 9. It would be appropriate to replace the word "transmitter" in claim 1 by "transparent guiding means".

- 9.2 It is not clear from claim 1 (cf last paragraph) what is meant by "bright field illumination" and "dark field illumination" particularly in view of the fact that the type of illumination "result" seen by the reader (i.e. bright or dark) depends on the type of surface being scanned e.g. specular or matt. Moreover, the result depends on the angle at which the code is being read with respect to the reader. An appropriate definition of the different types of illumination can be found on page 2 of the description and should be introduced into claim 1 in order to meet the clarity requirement of Article 6 PCT.
- 9.3 Claims 2-10 are unclear for reasons similar to those in paragraphs 9-9.2 above.

From the INTERNATIONAL SEARCHING AUTHORITY

MAY 29 2007

**POSAI & MCKENNA**

4

To:

CESARI AND MCKENNA, LLP  
Attn. Loginov, William A.  
88 Black Falcon Avenue  
Boston, Massachusetts 02210  
ETATS-UNIS D'AMERIQUE

TOIC/DHO/MYT

NOTIFICATION OF TRANSMITTAL OF  
THE INTERNATIONAL SEARCH REPORT AND  
THE WRITTEN OPINION OF THE INTERNATIONAL  
SEARCHING AUTHORITY, OR THE DECLARATION

6.25.04 - Correct Abstract  
7.25.09 - Due: Resp to A19

(PCT Rule 44.1)

Applicant's or agent's file reference 104119-62PCT	Date of mailing (day/month/year) 25/05/2007  <b>FOR FURTHER ACTION</b> See paragraphs 1 and 4 below
International application No. PCT/US2006/041041	International filing date (day/month/year) 19/10/2006
Applicant  COGNEX TECHNOLOGY AND INVESTMENT CORPORATION	

1. ☒ The applicant is hereby notified that the international search report and the written opinion of the International Searching Authority have been established and are transmitted herewith.

**Filing of amendments and statement under Article 19:**

The applicant is entitled, if he so wishes, to amend the claims of the International Application (see Rule 46):

**When?** The time limit for filing such amendments is normally two months from the date of transmittal of the International Search Report.

**Where?** Directly to the International Bureau of WIPO, 34 chemin des Colombettes  
1211 Geneva 20, Switzerland, Facsimile No.: (41-22) 338.82.70

For more detailed instructions, see the notes on the accompanying sheet.

2. ☐ The applicant is hereby notified that no International search report will be established and that the declaration under Article 17(2)(a) to that effect and the written opinion of the International Searching Authority are transmitted herewith.
3. ☐ With regard to the protest against payment of (an) additional fee(s) under Rule 40.2, the applicant is notified that:
- ☐ the protest together with the decision thereon has been transmitted to the International Bureau together with the applicant's request to forward the texts of both the protest and the decision thereon to the designated Offices.
- ☐ no decision has been made yet on the protest; the applicant will be notified as soon as a decision is made.

**4. Reminders**


Shortly after the expiration of 18 months from the priority date, the International application will be published by the International Bureau. If the applicant wishes to avoid or postpone publication, a notice of withdrawal of the International application, or of the priority claim, must reach the International Bureau as provided in Rules 90bis.1 and 90bis.3, respectively, before the completion of the technical preparations for International publication.

The applicant may submit comments on an informal basis on the written opinion of the International Searching Authority to the International Bureau. The International Bureau will send a copy of such comments to all designated Offices unless an international preliminary examination report has been or is to be established. These comments would also be made available to the public but not before the expiration of 30 months from the priority date.

Within 19 months from the priority date, but only in respect of some designated Offices, a demand for International preliminary examination must be filed if the applicant wishes to postpone the entry into the national phase until 30 months from the priority date (in some Offices even later); otherwise, the applicant must, within 20 months from the priority date, perform the prescribed acts for entry into the national phase before those designated Offices.

In respect of other designated Offices, the time limit of 30 months (or later) will apply even if no demand is filed within 19 months.

See the Annex to Form PCT/IB/301 and, for details about the applicable time limits, Office by Office, see the PCT Applicant's Guide, Volume II, National Chapters and the WIPO Internet site.

Name and mailing address of the International Searching Authority  European Patent Office, P.B. 5818 Patentlaan 2 NL-2280 HV Rijswijk Tel. (+31-70) 340-2040, Tx. 31 651 epo nl, Fax: (+31-70) 340-3016	Authorized officer  Mustafa Corapci
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These Notes are intended to give the basic instructions concerning the filing of amendments under article 19. The Notes are based on the requirements of the Patent Cooperation Treaty, the Regulations and the Administrative Instructions under that Treaty. In case of discrepancy between these Notes and those requirements, the latter are applicable. For more detailed information, see also the *PCT Applicant's Guide*, a publication of WIPO.

In these Notes, "Article", "Rule", and "Section" refer to the provisions of the PCT, the PCT Regulations and the PCT Administrative Instructions, respectively.

## INSTRUCTIONS CONCERNING AMENDMENTS UNDER ARTICLE 19

The applicant has, after having received the international search report and the written opinion of the International Searching Authority, one opportunity to amend the claims of the international application. It should however be emphasized that, since all parts of the international application (claims, description and drawings) may be amended during the international preliminary examination procedure, there is usually no need to file amendments of the claims under Article 19 except where, e.g. the applicant wants the latter to be published for the purposes of provisional protection or has another reason for amending the claims before international publication. Furthermore, it should be emphasized that provisional protection is available in some States only (see *PCT Applicant's Guide*, Volume I/A, Annexes B1 and B2).

The attention of the applicant is drawn to the fact that amendments to the claims under Article 19 are not allowed where the International Searching Authority has declared, under Article 17(2), that no international search report would be established (see *PCT Applicant's Guide*, Volume I/A, paragraph 296).

### What parts of the international application may be amended?

Under Article 19, only the claims may be amended.

During the international phase, the claims may also be amended (or further amended) under Article 34 before the International Preliminary Examining Authority. The description and drawings may only be amended under Article 34 before the International Examining Authority.

Upon entry into the national phase, all parts of the international application may be amended under Article 28 or, where applicable, Article 41.

### When?

Within 2 months from the date of transmittal of the international search report or 16 months from the priority date, whichever time limit expires later. It should be noted, however, that the amendments will be considered as having been received on time if they are received by the International Bureau after the expiration of the applicable time limit but before the completion of the technical preparations for international publication (Rule 46.1).

### Where not to file the amendments?

The amendments may only be filed with the International Bureau and not with the receiving Office or the International Searching Authority (Rule 46.2).

Where a demand for international preliminary examination has been/is filed, see below.

### How?

Either by cancelling one or more entire claims, by adding one or more new claims or by amending the text of one or more of the claims as filed.

A replacement sheet must be submitted for each sheet of the claims which, on account of an amendment or amendments, differs from the sheet originally filed.

All the claims appearing on a replacement sheet must be numbered in Arabic numerals. Where a claim is cancelled, no renumbering of the other claims is required. In all cases where claims are renumbered, they must be renumbered consecutively (Section 205(b)).

The amendments must be made in the language in which the international application is to be published.

### What documents must/may accompany the amendments?

#### Letter (Section 205(b)):

The amendments must be submitted with a letter.

The letter will not be published with the international application and the amended claims. It should not be confused with the "Statement under Article 19(1)" (see below, under "Statement under Article 19(1)").

The letter must be in English or French, at the choice of the applicant. However, if the language of the international application is English, the letter must be in English; if the language of the international application is French, the letter must be in French.

## INTERNATIONAL SEARCH REPORT

(PCT Article 18 and Rules 43 and 44)

Applicant's or agent's file reference 104119-62PCT	<b>FOR FURTHER ACTION</b> see Form PCT/ISA/220 as well as, where applicable, item 5 below.	
International application No. PCT/US2006/041041	International filing date (day/month/year) 19/10/2006	(Earliest) Priority Date (day/month/year) 24/10/2005
Applicant COGNEX TECHNOLOGY AND INVESTMENT CORPORATION		

This International search report has been prepared by this International Searching Authority and is transmitted to the applicant according to Article 18. A copy is being transmitted to the International Bureau.

This International search report consists of a total of 6 sheets.

☐ It is also accompanied by a copy of each prior art document cited in this report.

## 1. Basis of the report

a. With regard to the language, the international search was carried out on the basis of:

- ☒ the international application in the language in which it was filed  
☐ a translation of the international application into \_\_\_\_\_, which is the language of a translation furnished for the purposes of international search (Rules 12.3(a) and 23.1(b))

b. ☐ With regard to any nucleotide and/or amino acid sequence disclosed in the international application, see Box No. I.

2. ☐ Certain claims were found unsearchable (See Box No. II)

3. ☒ Unity of invention is lacking (see Box No. III)

4. With regard to the title,

- ☒ the text is approved as submitted by the applicant  
☐ the text has been established by this Authority to read as follows:

5. With regard to the abstract,

- ☐ the text is approved as submitted by the applicant  
☒ the text has been established, according to Rule 38.2(b), by this Authority as it appears in Box No. IV. The applicant may, within one month from the date of mailing of this international search report, submit comments to this Authority

6. With regard to the drawings,

- a. the figure of the drawings to be published with the abstract is Figure No. 4  
☐ as suggested by the applicant  
☐ as selected by this Authority, because the applicant failed to suggest a figure  
☒ as selected by this Authority, because this figure better characterizes the invention  
 b. ☐ none of the figures is to be published with the abstract

## Box No. IV Text of the abstract (Continuation of item 5 of the first sheet)

This provides a plurality of novel features that can be applied variously to a reader. In one embodiment, the light pipe(244) is constructed from durable polycarbonate for increased shock resistance and can define a rectangular cross section. The chamfered end (230) of the light pipe is textured or frosted to further diffuse refracted light passing through the end so as to present a more even effect. The conical/tapered diffuser(280) within the light pipe is illuminated by a reflector(230) with a white textured surface that reflects a plurality of rearward-directed illumination sources(282) back into the diffuser. The reflector can define a predetermined cross section that directs further light into the forwardmost, remote regions of the diffuser to generate a better spread of light and alleviate spotting effects. The textured surface on the chamfered light pipe end can be employed to better project indicator light. The illumination sources (310) are arranged in a ring at the inner end of the pipe, and can be multi-colored sources that respond to the controller to project and appropriate color and/or blink in an appropriate pattern to indicate various conditions, such as read success or failure. The controller is adapted to provide indications between image acquisitions. The controller can operate individual portions of the ring so that only corresponding portions of the light pipe perimeter are illuminated in a particular color (quadrants, for example) at a given time. Different quadrants may be simultaneously illuminated in different colors in one example.



**A. CLASSIFICATION OF SUBJECT MATTER**  
INV. G06K7/10

According to International Patent Classification (IPC) or to both national classification and IPC

**B. FIELDS SEARCHED**

Minimum documentation searched (classification system followed by classification symbols)  
G06K

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the International search (name of data base and, where practical, search terms used)

EPO-Internal, WPI Data

**C. DOCUMENTS CONSIDERED TO BE RELEVANT**

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	US 2005/087601 A1 (GERST CARL W III [US] ET AL) 28 April 2005 (2005-04-28) cited in the application paragraphs [0028] - [0030]; figure 4	1,2
A	WO 99/49347 A (AUTO IMAGE ID INC [US]) 30 September 1999 (1999-09-30) page 8, line 1 - line 10; figure 1 page 9, line 3 - line 17	1,2,12

*03-0016  
Cited by  
examiner*

☐ Further documents are listed in the continuation of Box C.

☒ See patent family annex.

\* Special categories of cited documents:

- \*A\* document defining the general state of the art which is not considered to be of particular relevance
- \*E\* earlier document but published on or after the international filing date
- \*L\* document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)
- \*O\* document referring to an oral disclosure, use, exhibition or other means
- \*P\* document published prior to the international filing date but later than the priority date claimed

- \*T\* later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention
- \*X\* document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone
- \*Y\* document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art.
- \*Z\* document member of the same patent family

Date of the actual completion of the international search

23 February 2007

Date of mailing of the international search report

25/05/2007

Name and mailing address of the ISA/

European Patent Office, P.B. 5818 Patentlaan 2  
NL - 2280 HV Rijswijk  
Tel. (+31-70) 340-2040, Tx. 31 651 epo nt,  
Fax: (+31-70) 340-3016

Authorized officer

Chiarizia, Salvatore

**Box II Observations where certain claims were found unsearchable (Continuation of item 2 of first sheet)**

This International Search Report has not been established in respect of certain claims under Article 17(2)(a) for the following reasons:

1. ☐ Claims Nos.:  
because they relate to subject matter not required to be searched by this Authority, namely:
2. ☐ Claims Nos.:  
because they relate to parts of the International Application that do not comply with the prescribed requirements to such an extent that no meaningful International Search can be carried out, specifically:
3. ☐ Claims Nos.:  
because they are dependent claims and are not drafted in accordance with the second and third sentences of Rule 6.4(a).

**Box III Observations where unity of invention is lacking (Continuation of item 3 of first sheet)**

This International Searching Authority found multiple inventions in this International application, as follows:

see additional sheet

1. ☐ As all required additional search fees were timely paid by the applicant, this International Search Report covers all searchable claims.
2. ☐ As all searchable claims could be searched without effort justifying an additional fee, this Authority did not invite payment of any additional fee.
3. ☐ As only some of the required additional search fees were timely paid by the applicant, this International Search Report covers only those claims for which fees were paid, specifically claims Nos.:
4. ☒ No required additional search fees were timely paid by the applicant. Consequently, this International Search Report is restricted to the invention first mentioned in the claims; it is covered by claims Nos.:

1-12

**Remark on Protest**

- ☐ The additional search fees were accompanied by the applicant's protest.
- ☐ No protest accompanied the payment of additional search fees.

## FURTHER INFORMATION CONTINUED FROM PCT/ISA/ 210

This International Searching Authority found multiple (groups of) inventions in this international application, as follows:

## 1. claims: 1-12

Illumination assembly comprising a light pipe having a chamfered distal end, the distal end including an outer surface having a diffusive surface exture

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## 2. claims: 13-17

Illumination assembly comprising a light pipe and a tapered diffuser located within an interior perimeter of the light pipe

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## 3. claims: 18-22

Illumination assembly comprising a light pipe projecting lights from a ring of illumination sources, wherein the illumination siurces are interconnected to a controller so as to indicate a predetermined status of the reader

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## 4. claims: 23-29

Illumination assembly comprising a light pipe defined by four adjacent sides including a first opposing pair of sides and sa second opposing pair of sides

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Patent document cited in search report		Publication date	Patent family member(s)	Publication date
US 2005087601	A1	28-04-2005	WO 2005041556 A2	06-05-2005
WO 9949347	A	30-09-1999	AU 3090199 A	18-10-1999
			CA 2324626 A1	30-09-1999
			EP 1064580 A1	03-01-2001
			JP 2002507779 T	12-03-2002
			MX PA00009228 A	03-12-2004
			NO 20004706 A	27-10-2000

## Notification of Reasons for Refusal

Patent Application No.: 2006-536784  
Drafting Date: September 28, 2009  
Examiner of JPO: Shun Umezawa 8226 5N00  
Representative/Applicant: Takao Kawasaki et al.  
Applicable Provisions: Patent Law Sections 29(2), 36

This Application should be refused for the reasons mentioned below. If the applicant has any argument against the reason, such argument should be submitted within three (3) months from the dispatch date of this notification.

### Reasons

A. The inventions in the claims mentioned below of the subject application should not be granted a patent under Patent Law Section 29(2) since it could have easily been made by persons who have common knowledge in the technical field to which the inventions pertain, on the basis of the inventions described in the publications mentioned below which were distributed in Japan or foreign countries prior to the filing of the subject application.

**Notes (For the cited references, see the listing of the cited references)**

### Regarding Claims 1 to 4

The cited reference 1 discloses a digital scanning device such as a bar-code reader, capable of selectively driving and adjusting the individually-controllable lighting elements, for example, the device capable of switching operation of light projection parts by stopping the operation of the first light projection part 2-1, and at the same time, starting the operation of the second light projection part 2-2, wherein an output of an image sensor such as an output of the amplifier 5 is fed back to a controller such as the control drive circuit 9 (paragraph [0019] to [0023]).

The cited reference 2 (pages 4-6) discloses the following technical features of:

- (a) use of diodes 131, 132, deflectors 141, 142, and an image sensor such as a CCD camera (which correspond to the light source that provides dark-field illumination of the present invention)
- (b) adjustment of radiation intensity of the diodes 131, 132 via the separately controllable quadrants Q1 to Q4 (which corresponds to the circular ring as a light-emitting portion of the present invention, the ring including a plurality of quadrants whose brightness can be individually adjusted)
- (c) providing the diode 431 proximate to the irradiation surface (which corresponds to use of an active illumination pipe in the present invention)
- (d) the outer protective cap 440 whose opaque surface includes a mirror surface 435 (which corresponds to a feature of the present invention for slanting the light emitted by the illuminating portion so as to provide a low-angle dark-field illumination)

Therefore, it could have been easily made to apply the technical features of the cited reference 2 to the invention of the cited reference 1 to arrive at the invention claimed in claims 1 to 4.

#### **Regarding Claim 5**

The cited reference 1 discloses a digital scanning device such as a bar-code reader, capable of selectively driving and adjusting the individually-controllable lighting elements, for example, the device capable of switching operation of light projection parts by stopping the operation of the first light projection part 2-1, and at the same time, starting the operation of the second light projection part 2-2, wherein an output of an image sensor such as an output of the amplifier 5 is fed back to a controller such as the control drive circuit 9 (paragraph [0019] to [0023]).

The cited reference 2 (pages 4-6) discloses the following technical features of:

- (a) use of diodes 131, 132, deflectors 141, 142, and an image sensor such as a CCD camera (which correspond to the light source that provides dark-field illumination of the present invention)
- (b) adjustment of radiation intensity of the diodes 131, 132 via the separately controllable quadrants Q1 to Q4 (which corresponds to the circular ring as a light-emitting portion of the present invention, the ring including a plurality of quadrants whose brightness can be individually adjusted)
- (c) providing the diode 431 proximate to the irradiation surface (which corresponds to use of an active illumination pipe in the present invention)
- (d) the outer protective cap 440 whose opaque surface includes a mirror surface 435 (which corresponds to a feature of the present invention for slanting the light emitted by the illuminating portion so as to provide a low-angle dark-field illumination)

The cited reference 3 (page 2) discloses the following technical features of:

- (a) a portion outside of the inner cylinder 3, which serves as the passive illumination pipe of the present invention
- (b) a means such as a light-shielding plate for manually selecting a light-emitting portion
- (c) use of optical shutter 5 operable to be opened when providing a bright-field illumination (selective operation of bright-field illumination).

Therefore, it could have easily been made to apply the technical features of the cited references 2 and 3 to the invention of the cited reference 1 to arrive at the invention claimed in claim 5.

#### **Regarding Claims 6 to 9**

The cited reference 1 discloses a digital scanning device such as a bar-code reader, capable of selectively driving and adjusting the individually-controllable lighting elements, for example, the device capable of switching operation of light projection parts by stopping the operation of the first light projection part 2-1, and at the same time, starting the operation of the second light projection part 2-2, wherein an output of an image sensor such as an output of the amplifier 5 is fed back to a controller such as the control drive circuit 9 (paragraph [0019] to [0023]).

The cited reference 2 (pages 4-6) discloses the following technical features of:

- (a) use of diodes 131, 132, deflectors 141, 142, and an image sensor such as a CCD camera (which correspond to the light source that provides dark-field illumination of the present invention)
- (b) adjustment of radiation intensity of the diodes 131, 132 via the separately controllable quadrants Q1 to Q4 (which corresponds to the circular ring as a light-emitting portion of the present invention, the ring including a plurality of quadrants whose brightness can be individually adjusted)
- (c) providing the diode 431 proximate to the irradiation surface (which corresponds to use of an active illumination pipe in the present invention)
- (d) the outer protective cap 440 whose opaque surface includes a mirror surface 435 (which corresponds to a feature of the present invention for slanting the light emitted by the illuminating portion so as to provide a low-angle dark-field illumination)

The cited reference 3 (page 2) discloses the following technical features of:

- (a) a portion outside of the inner cylinder 3, which serves as the passive illumination pipe of the present invention
- (b) a means such as a light-shielding plate for manually selecting a light-emitting portion
- (c) use of optical shutter 5 operable to be opened when providing a bright-field illumination (selective operation of bright-field illumination).

The cited reference 4 (paragraph [0007]) teaches reduction to practice as a handheld system and a fixed (or stationary) system.

Therefore, it could have easily been made to apply the technical features of the cited references 2 to 4 to the invention of the cited reference 1 to arrive at the invention claimed in claims 6 to 9.

#### **Regarding Claims 10, 11**

The cited reference 1 discloses a digital scanning device such as a bar-code reader, capable of selectively driving and adjusting the individually-controllable lighting elements, for example, the device capable of switching operation of light projection parts by stopping the operation of the first light projection part 2-1, and at the same time, starting the operation of the second light projection part 2-2, wherein an output of an image sensor such as an output of the amplifier 5 is fed back to a controller such as the control drive circuit 9 (paragraph [0019] to [0023]).

The cited reference 2 (pages 4-6) discloses the following technical features of:

- (a) use of diodes 131, 132, deflectors 141, 142, and an image sensor such as a CCD camera (which correspond to the light source that provides dark-field illumination of the present invention)
- (b) adjustment of radiation intensity of the diodes 131, 132 via the separately controllable quadrants Q1 to Q4 (which corresponds to the circular ring as a light-emitting portion of the present invention, the ring including a plurality of quadrants whose brightness can be individually adjusted)
- (c) providing the diode 431 proximate to the irradiation surface (which corresponds to use of an active illumination pipe in the present invention)
- (d) the outer protective cap 440 whose opaque surface includes a mirror surface 435 (which corresponds to a feature of the present invention for slanting the light emitted by the illuminating portion so as to provide a low-angle dark-field illumination)

The cited reference 3 (page 2) discloses the following technical features of:

- (a) a portion outside of the inner cylinder 3, which serves as the passive illumination pipe of the present invention
- (b) a means such as a light-shielding plate for manually selecting a light-emitting portion
- (c) use of optical shutter 5 operable to be opened when providing a bright-field illumination (selective operation of bright-field illumination).

The cited reference 4 (paragraph [0007]) teaches reduction to practice as a handheld system and a fixed (or stationary) system.

The cited reference 5 (paragraphs [0027] to [0043]) discloses the following features of:

- (a) storing data regarding the light-emitting portion such as light condition (recording)
- (b) adjustment on the basis of statistical analysis of statistical data (judgment)
- (c) determining whether or not data is sufficient by making an attempt such as attempt to read (judgment)
- (d) adjusting the focusing position (change of focus)

Therefore, it could have easily been made to apply the technical features of the cited references 2 to 5 to the invention claimed of the cited reference 1 to arrive at the invention claimed in claims 10 and 11.

#### **Regarding Claims 12 to 21**

The cited reference 1 discloses a digital scanning device such as a bar-code reader, capable of selectively driving and adjusting the individually-controllable lighting elements, for example, the device capable of switching operation of light projection parts by stopping the operation of the first light projection part 2-1, and at the same time, starting the operation of the second light projection part 2-2, wherein an output of an image sensor such as an output of the amplifier 5 is fed back to a controller such as the control drive circuit 9 (paragraph [0019] to [0023]).

The cited reference 2 (pages 4-6) discloses the following technical features of:

- (a) use of diodes 131, 132, deflectors 141, 142, and an image sensor such as a CCD camera (which correspond to the light source that provides dark-field illumination of the present invention)
- (b) adjustment of radiation intensity of the diodes 131, 132 via the separately controllable quadrants Q1 to Q4 (which corresponds to the circular ring as a light-emitting portion of the present invention, the ring including a plurality of quadrants whose brightness can be individually adjusted)
- (c) providing the diode 431 proximate to the irradiation surface (which corresponds to use of an active illumination pipe in the present invention)
- (d) the outer protective cap 440 whose opaque surface includes a mirror surface 435 (which corresponds to a feature of the present invention for slanting the light emitted by the illuminating portion so as to provide a low-angle dark-field illumination)

The cited reference 3 (page 2) discloses the following technical features of:

- (a) a portion outside of the inner cylinder 3, which serves as the passive illumination pipe of the



present invention

- (b) a means such as a light-shielding plate for manually selecting a light-emitting portion
- (c) use of optical shutter 5 operable to be opened when providing a bright-field illumination (selective operation of bright-field illumination).

The cited reference 4 (paragraph [0007]) teaches reduction to practice as a handheld system and a fixed (or stationary) system.

The cited reference 5 (paragraphs [0027] to [0043]) discloses the following features of:

- (a) storing data regarding the light-emitting portion such as light condition (recording)
- (b) adjustment on the basis of statistical analysis of statistical data (judgment)
- (c) determining whether or not data is sufficient by making an attempt such as attempt to read (judgment)
- (d) adjusting the focusing position (change of focus)

The cited reference 6 discloses changing of an exposure time for example via the shutter speed (paragraph [0039]).

Therefore, it could have easily been made to apply the technical features of the cited references 2 to 6 to the invention of the cited reference 1 to arrive at the invention claimed in claims 12 to 21.

#### **Regarding Claims 22 to 25**

The cited reference 1 discloses a digital scanning device such as a bar-code reader, capable of selectively driving and adjusting the individually-controllable lighting elements, for example, the device capable of switching operation of light projection parts by stopping the operation of the first light projection part 2-1, and at the same time, starting the operation of the second light projection part 2-2, wherein an output of an image sensor such as an output of the amplifier 5 is fed back to a controller such as the control drive circuit 9 (paragraph [0019] to [0023]).

The cited reference 2 (pages 4-6) discloses the following technical features of:

- (a) use of diodes 131, 132, deflectors 141, 142, and an image sensor such as a CCD camera (which correspond to the light source that provides dark-field illumination of the present invention)
- (b) adjustment of radiation intensity of the diodes 131, 132 via the separately controllable quadrants Q1 to Q4 (which corresponds to the circular ring as a light-emitting portion of the present invention, the ring including a plurality of quadrants whose brightness can be individually adjusted)
- (c) providing the diode 431 proximate to the irradiation surface (which corresponds to use of an active illumination pipe in the present invention)
- (d) the outer protective cap 440 whose opaque surface includes a mirror surface 435 (which corresponds to a feature of the present invention for slanting the light emitted by the illuminating portion so as to provide a low-angle dark-field illumination)

The cited reference 3 (page 2) discloses the following technical features of:

- (a) a portion outside of the inner cylinder 3, which serves as the passive illumination pipe of the present invention

- (b) a means such as a light-shielding plate for manually selecting a light-emitting portion
- (c) use of optical shutter 5 operable to be opened when providing a bright-field illumination (selective operation of bright-field illumination).

The cited reference 4 (paragraph [0007]) teaches reduction to practice as a handheld system and a fixed (or stationary) system.

The cited reference 5 (paragraphs [0027] to [0043]) discloses the following features of:

- (a) storing data regarding the light-emitting portion such as light condition (recording)
- (b) adjustment on the basis of statistical analysis of statistical data (judgment)
- (c) determining whether or not data is sufficient by making an attempt such as attempt to read (judgment)
- (d) adjusting the focusing position (change of focus)

The cited reference 6 discloses changing of an exposure time for example via the shutter speed (paragraph [0039]).

The cited reference 7 discloses (lower right column of page 2) an arc semicircular fluorescent lamp 123 (which corresponds to use of a light-emitting portion in an arcuate shape in the present invention).

Therefore, it could have easily been made to apply the technical features of the cited reference 2 to 7 to the invention of the cited reference 1 to arrive at the invention claimed in claims 22 to 25.

#### **Regarding Claims 26 to 28**

The cited reference 1 discloses a digital scanning device such as a bar-code reader, capable of selectively driving and adjusting the individually-controllable lighting elements, for example, the device capable of switching operation of light projection parts by stopping the operation of the first light projection part 2-1, and at the same time, starting the operation of the second light projection part 2-2, wherein an output of an image sensor such as an output of the amplifier 5 is fed back to a controller such as the control drive circuit 9 (paragraph [0019] to [0023]).

The cited reference 2 (pages 4-6) discloses the following technical features of:

- (a) use of diodes 131, 132, deflectors 141, 142, and an image sensor such as a CCD camera (which correspond to the light source that provides dark-field illumination of the present invention)
- (b) adjustment of radiation intensity of the diodes 131, 132 via the separately controllable quadrants Q1 to Q4 (which corresponds to the circular ring as a light-emitting portion of the present invention, the ring including a plurality of quadrants whose brightness can be individually adjusted)
- (c) providing the diode 431 proximate to the irradiation surface (which corresponds to use of an active illumination pipe in the present invention)
- (d) the outer protective cap 440 whose opaque surface includes a mirror surface 435 (which corresponds to a feature of the present invention for slanting the light emitted by the illuminating portion so as to provide a low-angle dark-field illumination)

The cited reference 3 (page 2) discloses the following technical features of:

- (a) a portion outside of the inner cylinder 3, which serves as the passive illumination pipe of the present invention
- (b) a means such as a light-shielding plate for manually selecting a light-emitting portion
- (c) use of optical shutter 5 operable to be opened when providing a bright-field illumination (selective operation of bright-field illumination).

The cited reference 4 (paragraph [0007]) teaches reduction to practice as a handheld system and a fixed (or stationary) system.

The cited reference 5 (paragraphs [0027] to [0043]) discloses the following features of:

- (a) storing data regarding the light-emitting portion such as light condition (recording)
- (b) adjustment on the basis of statistical analysis of statistical data (judgment)
- (c) determining whether or not data is sufficient by making an attempt such as attempt to read (judgment)
- (d) adjusting the focusing position (change of focus)

The cited reference 6 discloses changing of an exposure time for example via the shutter speed (paragraph [0039]).

The cited reference 7 discloses (lower right column of page 2) an arc semicircular fluorescent lamp 123 (which corresponds to use of a light-emitting portion in an arcuate shape in the present invention).

The cited reference 8 (paragraph [0034]) discloses retrieval of the setup value from the setting table in the RAM unit 8 (which corresponds to retrieval of the settings in the present invention).

Therefore, it could have easily been made to apply the technical features of the cited references 2 to 8 to the technical features of the cited reference 1 to arrive at the invention claimed in claims 26 to 28.

#### **Regarding Claims 29 to 36**

The cited reference 1 discloses a digital scanning device such as a bar-code reader, capable of selectively driving and adjusting the individually-controllable lighting elements, for example, the device capable of switching operation of light projection parts by stopping the operation of the first light projection part 2-1, and at the same time, starting the operation of the second light projection part 2-2, wherein an output of an image sensor such as an output of the amplifier 5 is fed back to a controller such as the control drive circuit 9 (paragraph [0019] to [0023]).

The cited reference 2 (pages 4-6) discloses the following technical features of:

- (a) use of diodes 131, 132, deflectors 141, 142, and an image sensor such as a CCD camera (which correspond to the light source that provides dark-field illumination of the present invention)
- (b) adjustment of radiation intensity of the diodes 131, 132 via the separately controllable quadrants

Q1 to Q4 (which corresponds to the circular ring as a light-emitting portion of the present invention, the ring including a plurality of quadrants whose brightness can be individually adjusted)  
(c) providing the diode 431 proximate to the irradiation surface (which corresponds to use of an active illumination pipe in the present invention)  
(d) the outer protective cap 440 whose opaque surface includes a mirror surface 435 (which corresponds to a feature of the present invention for slanting the light emitted by the illuminating portion so as to provide a low-angle dark-field illumination)

The cited reference 3 (page 2) discloses the following technical features of:

- (a) a portion outside of the inner cylinder 3, which serves as the passive illumination pipe of the present invention
- (b) a means such as a light-shielding plate for manually selecting a light-emitting portion
- (c) use of optical shutter 5 operable to be opened when providing a bright-field illumination (selective operation of bright-field illumination).

The cited reference 4 (paragraph [0007]) teaches reduction to practice as a handheld system and a fixed (or stationary) system.

The cited reference 5 (paragraphs [0027] to [0043]) discloses the following features of:

- (a) storing data regarding the light-emitting portion such as light condition (recording)
- (b) adjustment on the basis of statistical analysis of statistical data (judgment)
- (c) determining whether or not data is sufficient by making an attempt such as attempt to read (judgment)
- (d) adjusting the focusing position (change of focus)

The cited reference 6 discloses changing of an exposure time for example via the shutter speed (paragraph [0039]).

The cited reference 7 discloses (lower right column of page 2) an arc semicircular fluorescent lamp 123 (which corresponds to use of a light-emitting portion in an arcuate shape in the present invention).

The cited reference 8 (paragraph [0034]) discloses retrieval of the setup value from the setting table in the RAM unit 8 (which corresponds to retrieval of the settings in the present invention).

The cited reference 9 (paragraph [0022]) discloses determining the maximum value and the minimum value of the bar-code signal 2a to obtain the difference between these two values (which corresponds to evaluation of relative intensity of the bright pixel and a dark pixel).

Therefore, it could have easily been made to apply the technical features of the cited references 2 to 9 to the invention of the cited reference 1 to arrive at the invention claimed in claims 29 to 36.

B. The description of the scope of claims of this application does not comply with the

requirements under Patent Law Section 36(6)(ii) for the following reasons.

#### Notes

A clerical error is found in claim 3 (regarding Japanese translation of the term "quadrant").  
The term "said opaque top surface" lacks antecedent basis in claim 21.

Therefore, the invention according to claims 3 and 21 is unclear and indefinite.

If any reason for refusal is found later, it will be notified.

#### List of the Cited References

1. Japanese Patent Application Laid-Open Publication No. H08-129597
2. Japanese Patent Application Laid-Open Publication No. H02-100580
3. Japanese Patent Application Laid-Open Publication No. S53-062387
4. Japanese Patent Application Laid-Open Publication No. H06-124361
5. Japanese Patent Application Laid-Open Publication No. 2000-231600
6. Japanese Patent Application Laid-Open Publication No. 2001-307011
7. Japanese Patent Application Laid-Open Publication No. H03-053784
8. Japanese Patent Application Laid-Open Publication No. H08-287176
9. Japanese Patent Application Laid-Open Publication No. H04-223583

It should be noted that amendments of the description, scope of claims or drawings should be made within the scope of the matters described in the description, scope of claims and drawings originally attached to the application and/or within the scope of matters obvious from the description, scope of claims, and drawings originally attached to the application. The basis for such amendments should be included in the argumentation by specifically pointing out the portion(s) of the originally filed description and/or drawings by which the amendments are supported.

For any question or interview request regarding this Notification of Reasons for Refusal, please contact Yoshida. Data Processing (Storage Management) Division, 4th Patent Examination Department, Japan Patent Office (JPO) at 81-3-3581-1101 ext. 3508.

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#### Record of the Result of Prior Art Search

- Technical field to be searched: IPC G06K7/10, 00  
DB Name: -
- Prior art documents: -

This record does not constitute the reason for refusal.